

5-3820-205-20/1

TM 5-3820-205-20/1

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

ORGANIZATIONAL MAINTENANCE MANUAL

CRUSHER, ROLL: DIESEL AND
ELECTRIC DRIVEN; WHEEL MOUNTED,
PNEUMATIC TIRES; 75 TON PER HOUR
(EAGLE CRUSHER MODEL 5230B)

FSN 3820-788-5999

COMPONENT OF CRUSHING AND SCREENING
PLANT; DIESEL AND ELECTRIC DRIVEN;
WHEEL MOUNTED; 75 TON PER HOUR

This copy is a reprint which includes current
pages from Changes 1 and 2

HEADQUARTERS, DEPARTMENT OF THE ARMY

FEBRUARY, 1964

READER
FICHE

best copy available

D/01.11:

SAFETY PRECAUTIONS

BEFORE OPERATION

Maintain a metal-to-metal contact between container and fuel tank when filling the tank.

Use care when handling batteries and electrolyte. Electrolyte spilled on the skin will cause severe burns. Wash the affected area immediately.

When charging or servicing batteries, do not smoke or use open flame in the vicinity. Batteries generate hydrogen, a highly explosive gas.

Always see that the crusher is properly grounded before operating. Death by electrocution could result from contact with ungrounded components carrying current during operation.

Always assume a safe position when inflating a tire to avoid injury should the locking ring be forced from the rim.

Before operating the engine and crusher, be sure all personnel and loose tools or equipment are away from operating parts that may cause personal injury.

Keep walkways and ladders free of oil, grease, ice, and mud to prevent slipping and falling.

DURING OPERATION

Never fill the fuel tank while engine is in operation.

Use extreme caution in removing a radiator cap from an overheated engine. Stop operation and allow the engine to cool.

When on the operator's platform, attempt to keep one hand on a guard rail or guard chain to prevent falls to the ground or into the machinery.

Shut off the engine before making repairs or adjustments.

Before doing any work on the electrical system of the crusher, turn the main control switch to OFF-RESET and disconnect the main control panel from the power source.

When using fire extinguisher, avoid breathing the smoke.

When testing fuel injectors, keep hands away from nozzle spray, the high velocity may puncture the skin.

AFTER OPERATION

Maintain a metal-to-metal contact between container and fuel tank when filling the tank.

Shut the unit down when cleaning, adjusting, or lubricating.

Use extreme care when removing a radiator cap from an overheated engine.

Use only approved cleaning solvents to clean component parts of the crusher.

Disconnect batteries when working on electrical system.

Change
No. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, D. C., 17 June 1968

Organizational Maintenance Manual

**CRUSHER, ROLL: DIESEL AND ELECTRIC DRIVEN; WHEEL MOUNTED,
PNEUMATIC TIRES; 75 TON PER HOUR (EAGLE CRUSHER MODEL
5230B) FSN 3820-788-5999, COMPONENT OF CRUSHING AND
SCREENING PLANT; DIESEL AND ELECTRIC DRIVEN; WHEEL MOUNTED;
75 TON PER HOUR**

TM 5-3820-205-20/1, 28 February 1964, is changed as follows:

Page 10. Paragraph 5, lines 7 thru 10. Delete sentence beginning with "Units within serial number range 6590" and ending with "6587 have one."

Page 21. Item 14 is superseded as follows:

Check if red signal is visible. Check precleaner and service it when level of dirt approaches arrow indicator on body.

By Order of the Secretary of the Army:

HAROLD K. JOHNSON
General, United States Army
Chief of Staff

Official: _____

KENNETH G. WICKHAM
Major General, United States Army
The Adjutant General

Distribution:

Active Army, ARNG, USAR:

To be distributed in accordance with DA Form 12-25, Section II (qty rqr block No. 448 requirements for organizational maintenance for Rock Drilling Equipment, Crusher Roll.

Changes in force: C 1 and C 2

TM 5-3820-205-20/1
C 2

CHANGE }
No. 2 }

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D. C. 7 March 1969

Organizational Maintenance Manual

**CRUSHER, ROLL: DIESEL AND ELECTRIC DRIVEN;
WHEEL MOUNTED, PNEUMATIC TIRES; 75 TON PER HOUR
(EAGLE CRUSHER MODEL 523OB) FSN 3820-788-5999
(EAGLE CRUSHER MODEL 523OD) FSN 3820-876-7876
COMPONENT OF CRUSHING AND SCREENING PLANT,
DIESEL AND ELECTRIC DRIVEN; WHEEL MOUNTED; 75 TON PER HOUR**

TM 5-3820-205-20/1, 28 February 1964, is changed as follows:

The cover is changed to read as shown above.

Page 3. In paragraph 1a, line 3 "and 523OD" is added after 523OB.

Paragraph 1d is superseded as follows:

d. The reporting of errors, omissions, and recommendations for improving this publication by the user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to DA Publications) and forwarded direct to Commanding General, U. S. Army Mobility Equipment Command, ATTN: AMSME-MPP, 4300 Goodfellow Boulevard, St. Louis, Mo. 63120.

Page 4. Paragraph 4b(1), line 7, after "(revolutions per minute)" add "(Model 523OB); 170 at 1,700 rpm (Model 523OD)".

Paragraph 4b(1), line 8, after "1, 400 rpm" add "(Model 523OB); 1,700 rpm (Model 523OB); 1,700 rpm (Model 523OD)".

Paragraph 4b(5), line 2, after "1119953" add "(Model 523OB); 1119872 (Model 523OD)".

Paragraph 4b(7), line 2, change part number to read "SBG12-0042 (Model 523OB); SDG10-0042 (Model 523OB); SDG10-0034 (Model 523OD)".

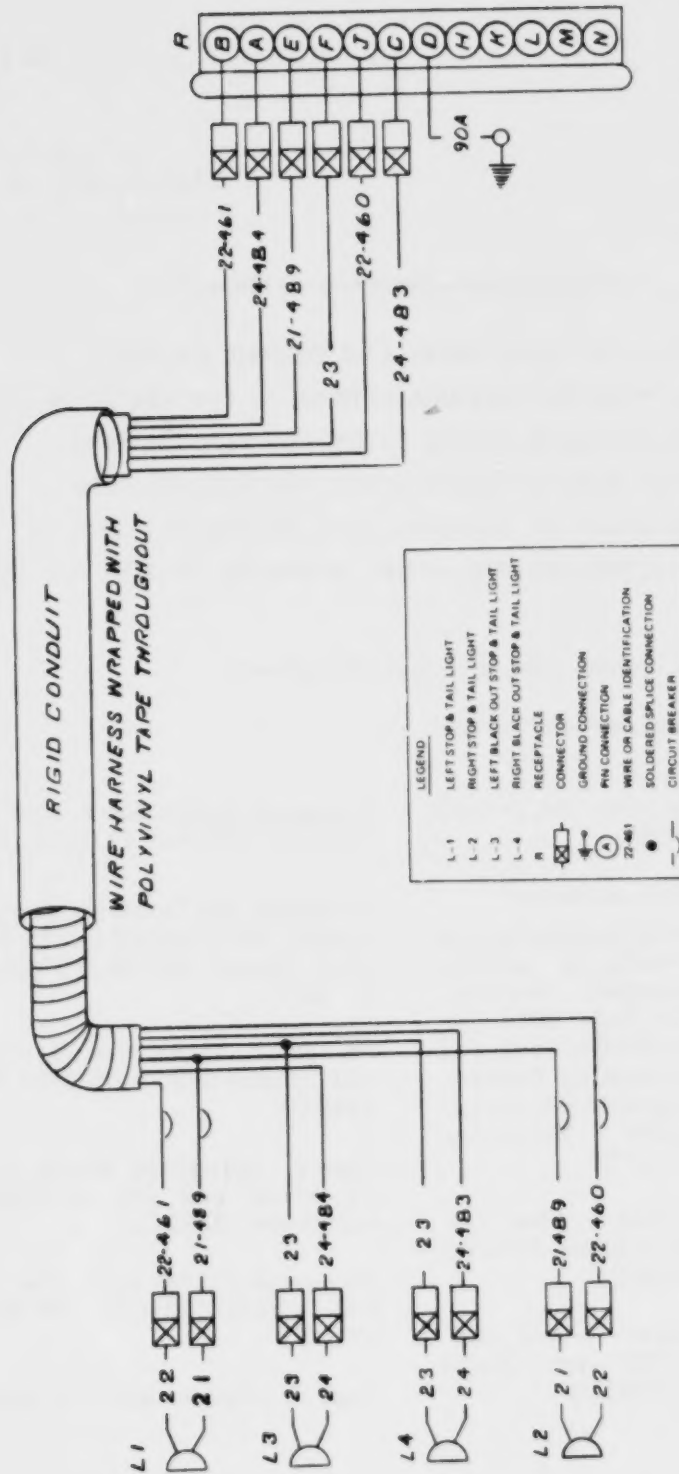
Paragraph 4b(8), line 2, after "639-16B", add "(Model 523OB); DGFCL 639-21B (Model 523OD)".

Page 5. Paragraph 4b(18), line 3, after "20 ply rating" add "(Model 523OB); 16 ply rating (Model 523OD)".

Paragraph 4b(20), line 7, after "500-600 ft-lb" add "(Model 523OB); 180-200 ft-lb (model 523OD)".

Page 8. Figure 1(3).1 is added as follows:

FRONT OF DOLLY



ME 3820-205-20/1/1 ③ .1 C/2

Figure 1③ 1—(Continued (Model 5230D)).

FRONT OF CHASSIS

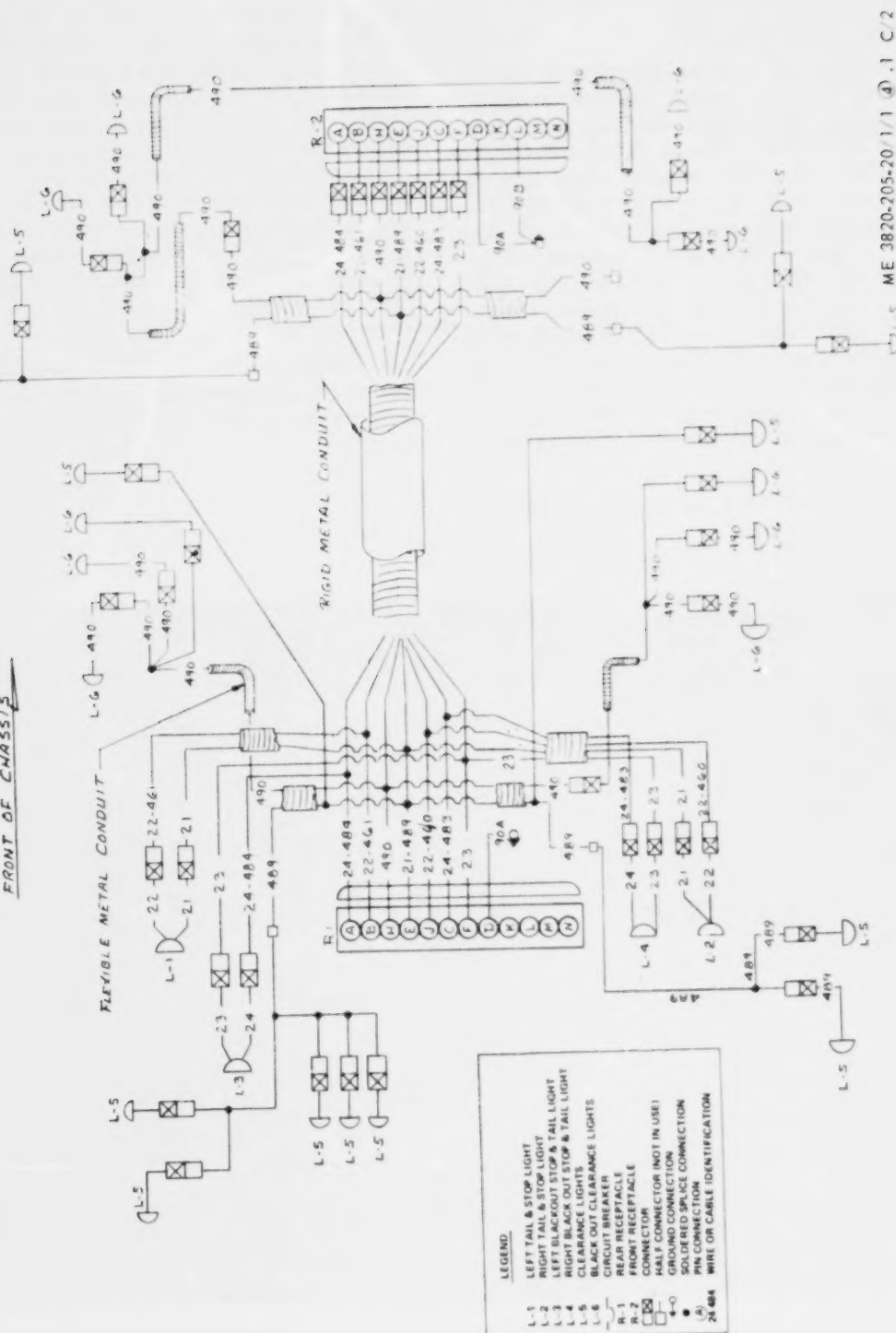


Figure 1④ 1 — (Continued (Model 5230D))

Page 10. Paragraph 5 is superseded as follows:

5. Difference in Models

a. This manual covers the Eagle Model 523OB roll crusher, serial number ranges 6550 through 6587, 6590 through 6629 and 6675 through 6697. Where differences exist between the two serial number ranges, each serial number range is covered separately in the applicable maintenance section of this manual. Units within serial number range 6590 through 6629 have two diesel engine air cleaners; units within serial number range 6550 through 6587 and 6675 through 6697 have one. Units within serial number range 6590 through 6629 and 6675 through 6697 have both coolant temperature and lubricating oil pressure warning lights, but the units

within serial number range 6550 through 6587 do not. Units within serial number range 6590 through 6629 and 6675 through 6697 are equipped with a dual ignition-starter switch; units within serial number range 6550 through 6587 are equipped with a separate switch for the ignition circuit and another switch for the starter energizing circuit. Units of equipment within serial number range 6590 through 6629 are equipped with a flexo-stick assembly, mounted on the drawbar assembly, which is used to suspend the hoses. On units within serial number range 6550 through 6587 the hose are attached to the drawbar assembly with hose clips.

b. Serial numbers 6675 through 6697 were partially redesigned to meet current military specifications and are designated as Model 523OD.

Page 33. Figure 14.1 is added as follows:

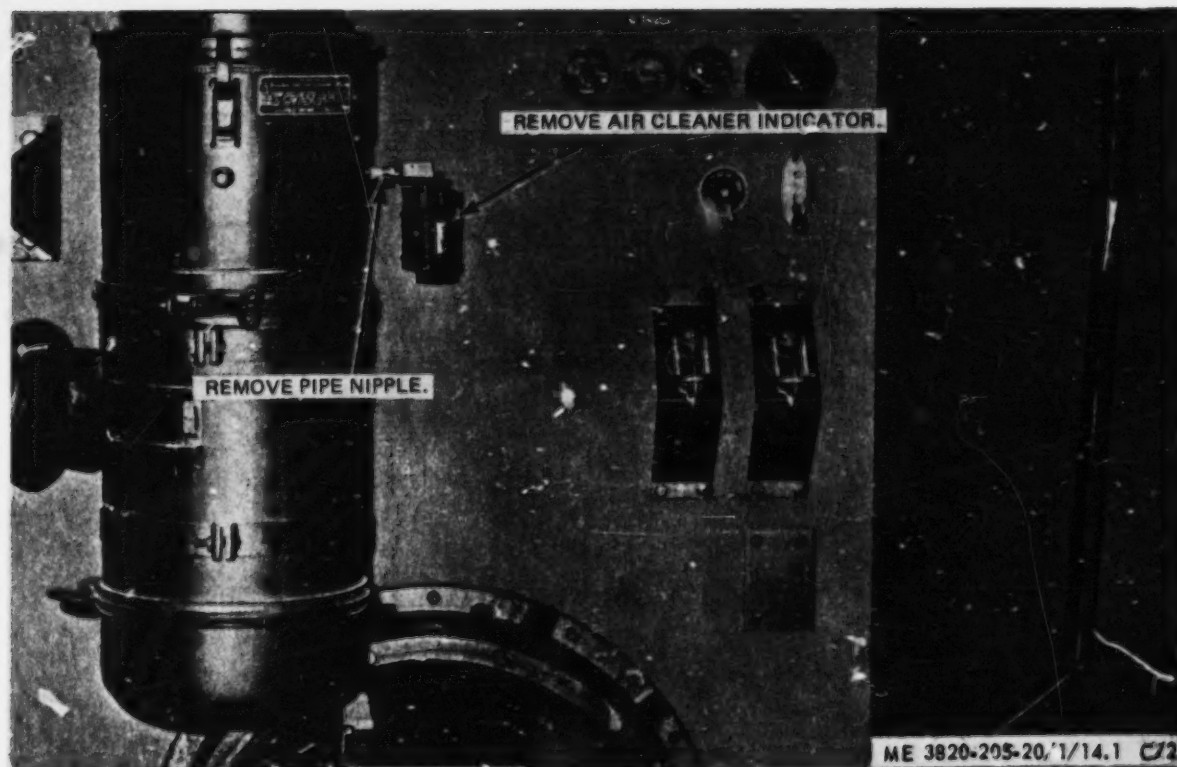
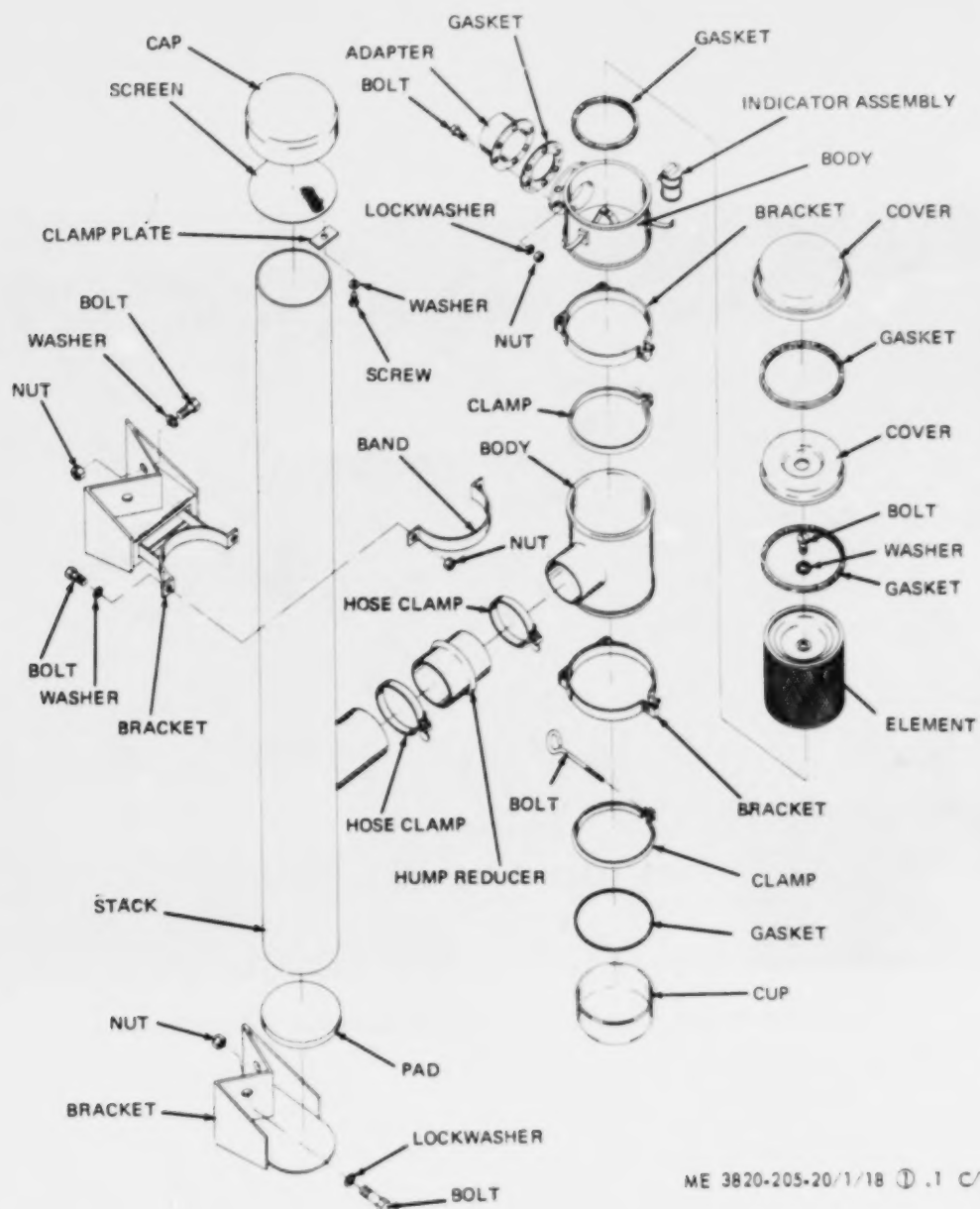


Figure 14.1. Air cleaner indicator, removal and installation (serial numbers 6675 through 6697).

Page 37. Figure 18 ①.1 is added as follows:



(Model 52300)

Figure 18 ①.1 — (Continued)

Page 46. Figure 27.1 is added as follows:

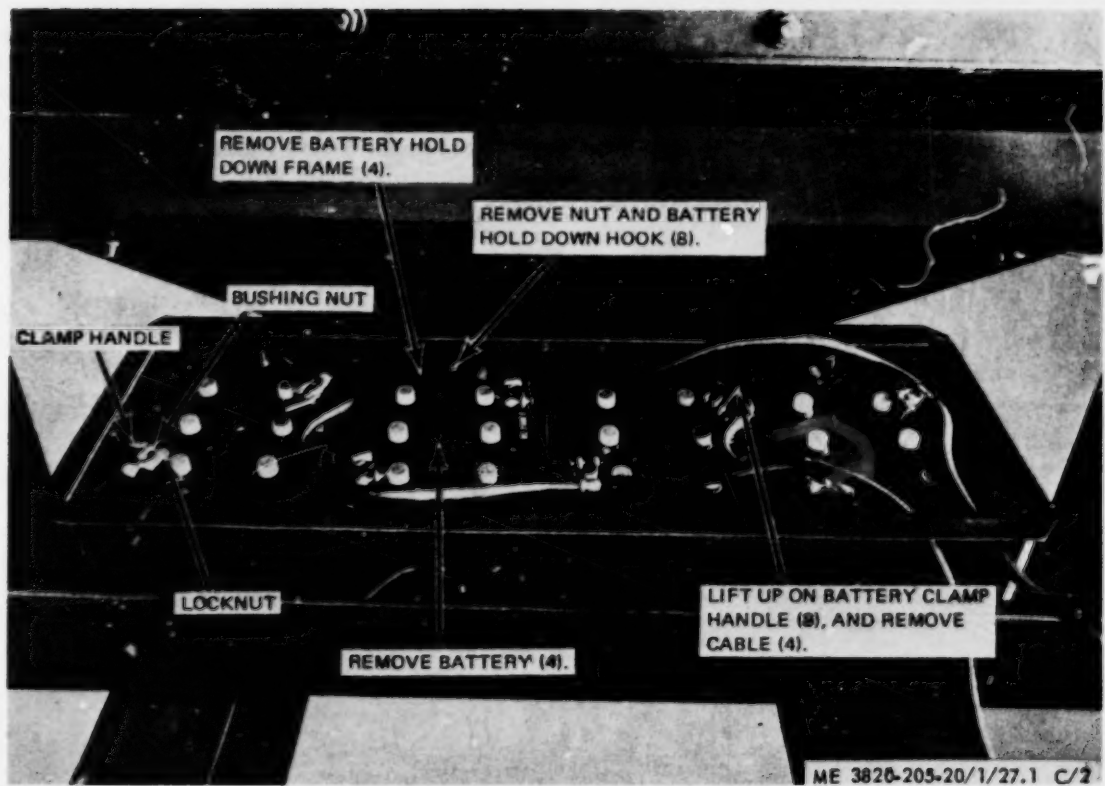


Figure 27.1. Batteries and cable, removal and installation (model 523OD).

Page 48. Figure 29.1 is added as follows:

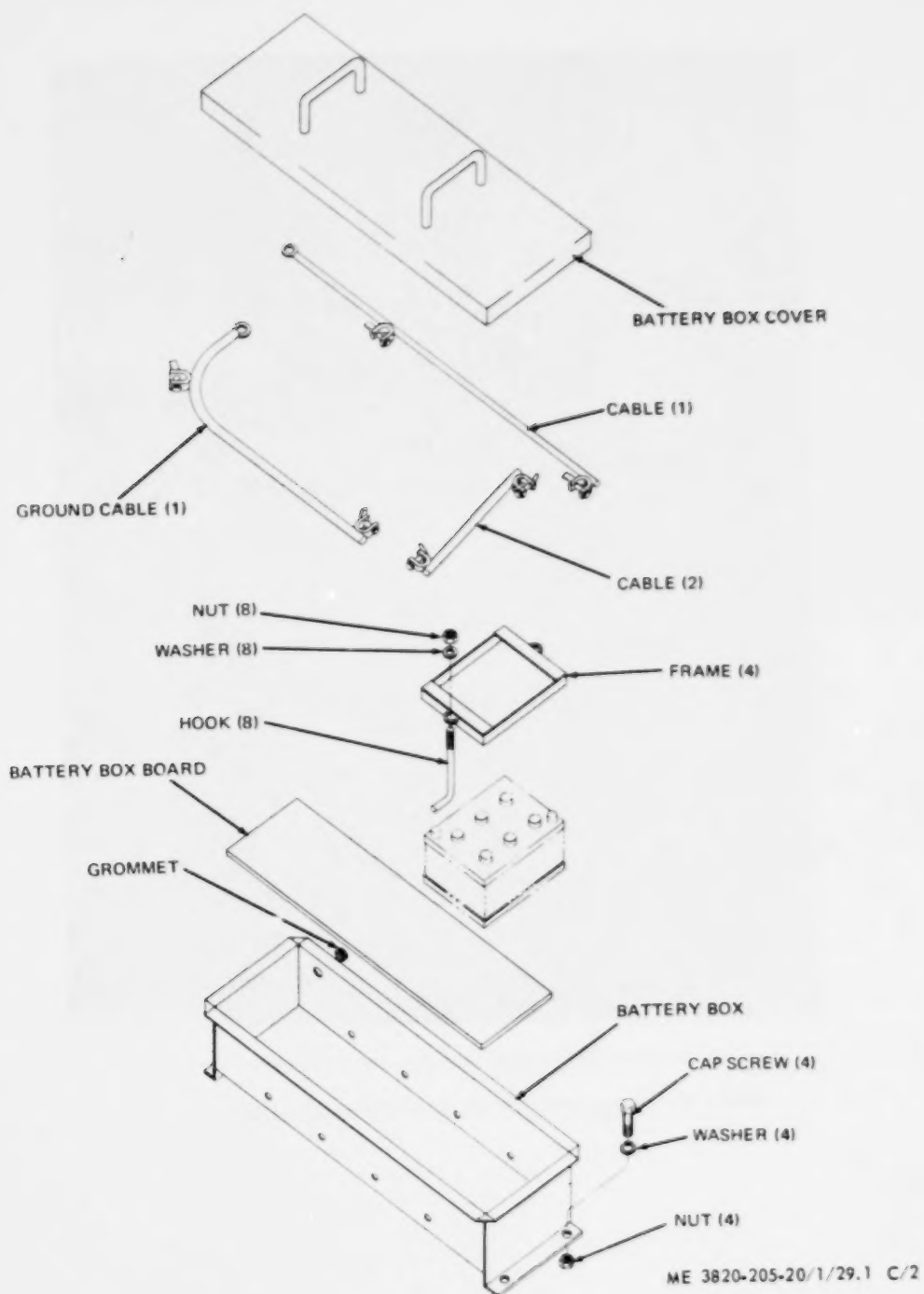
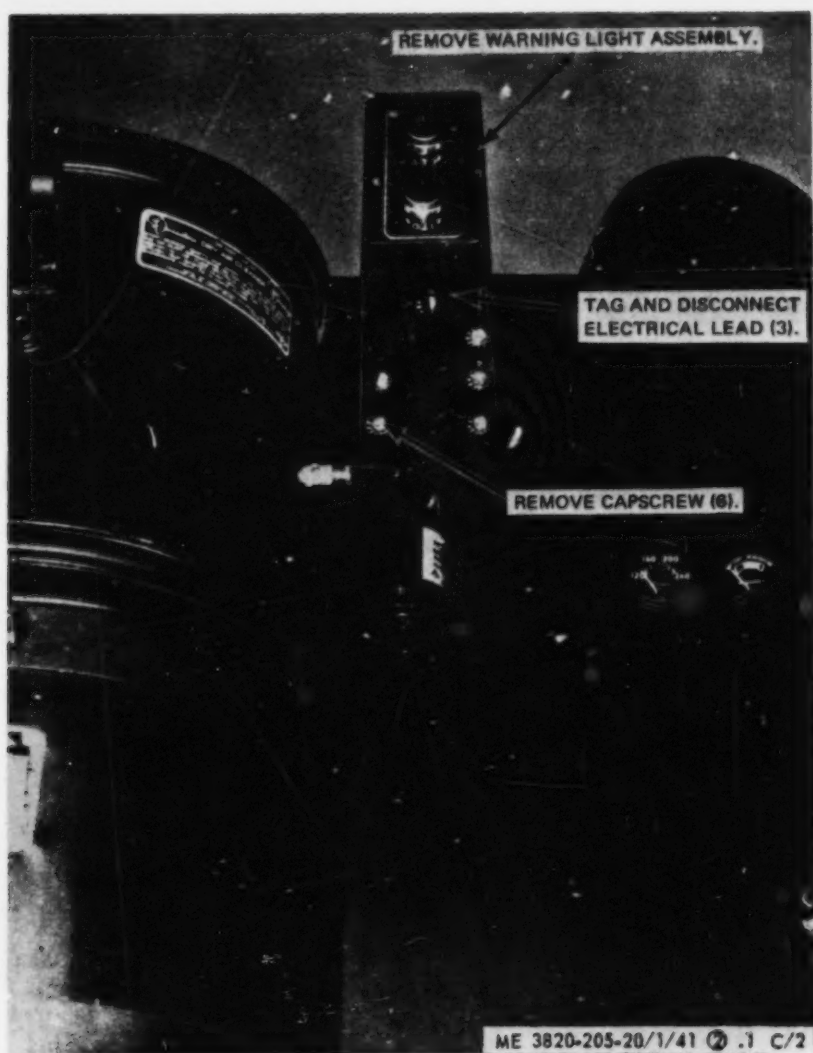


Figure 29.1. Battery box, exploded view (Model 5230D).

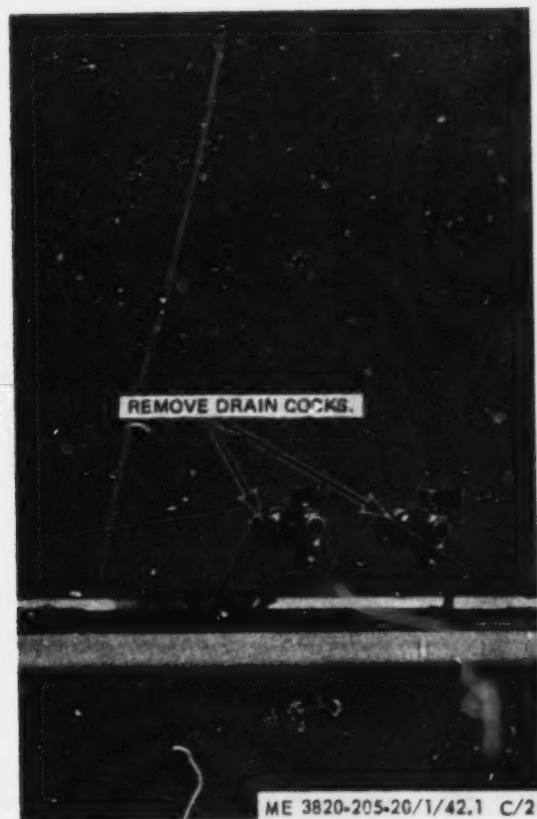
Page 66. Figure 41 ② .1 is added as follows:



C - Low oil pressure and high water temperature warning light (Model 5230D)

Figure 41 ② .1. — Continued (Model 5230D)

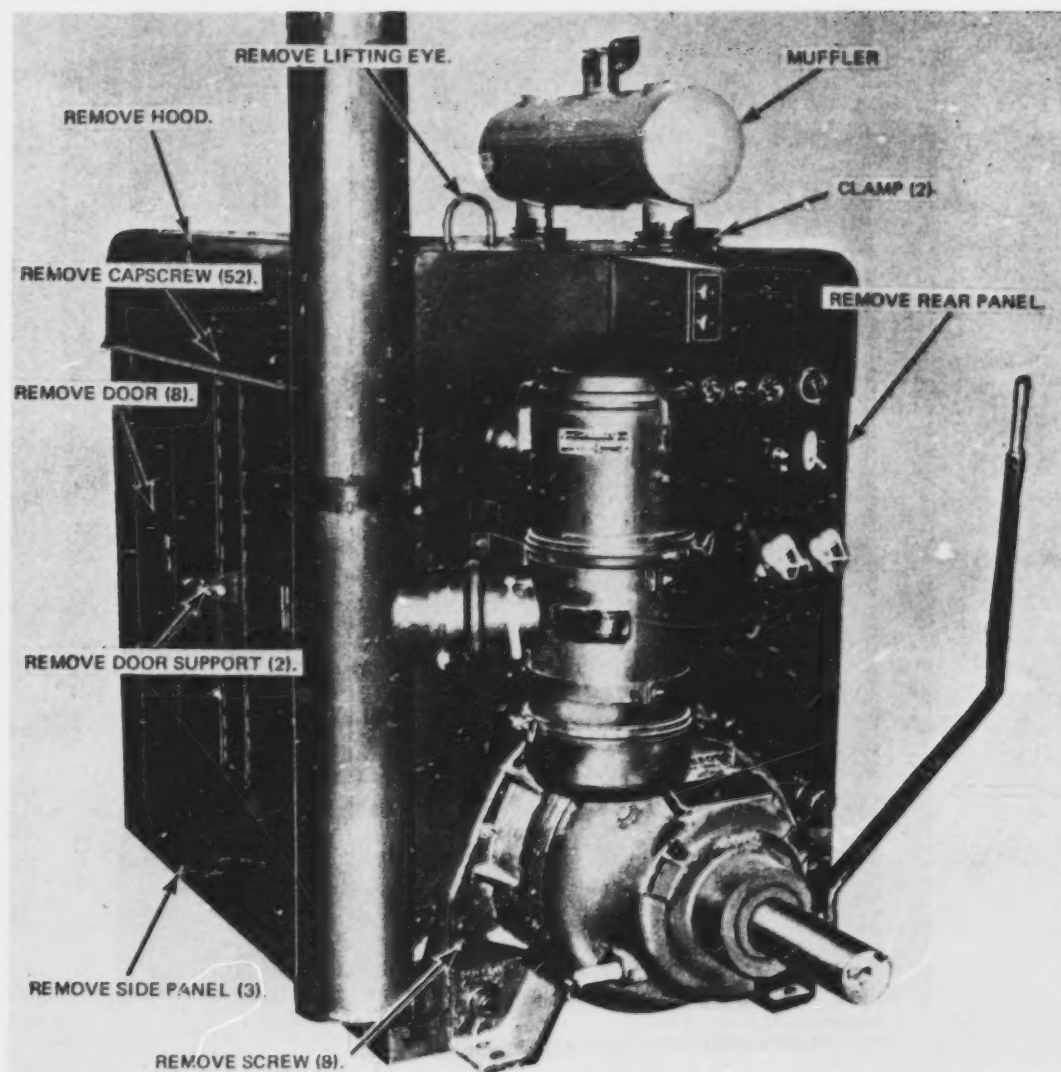
Page 67. Figure 42.1 is added as follows:



A — Water lines installed outer

Figure 42.1. (Drain lines, removal and installation (Model 523OD)).

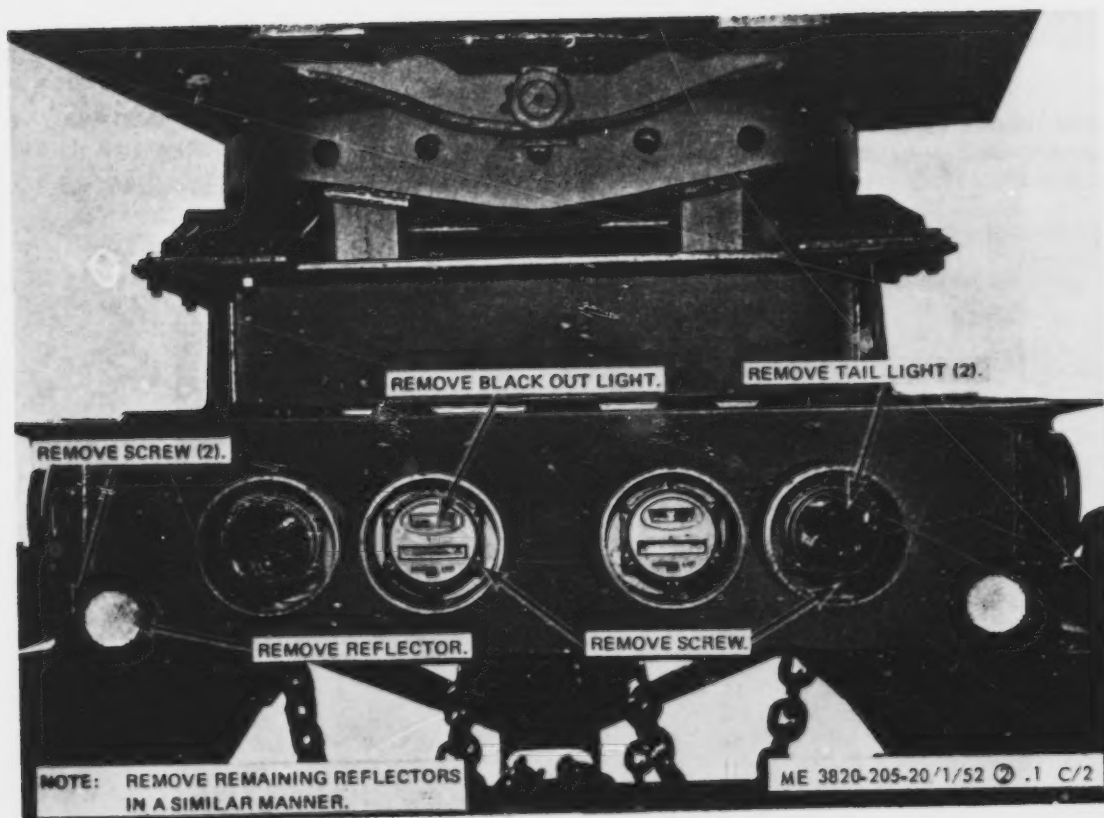
Page 69. Figure 44.1 is added as follows:



ME 3820-205-20/1/44.1 C/2

Figure 44.1. Engine housing, removal and installation (Model 523OD).

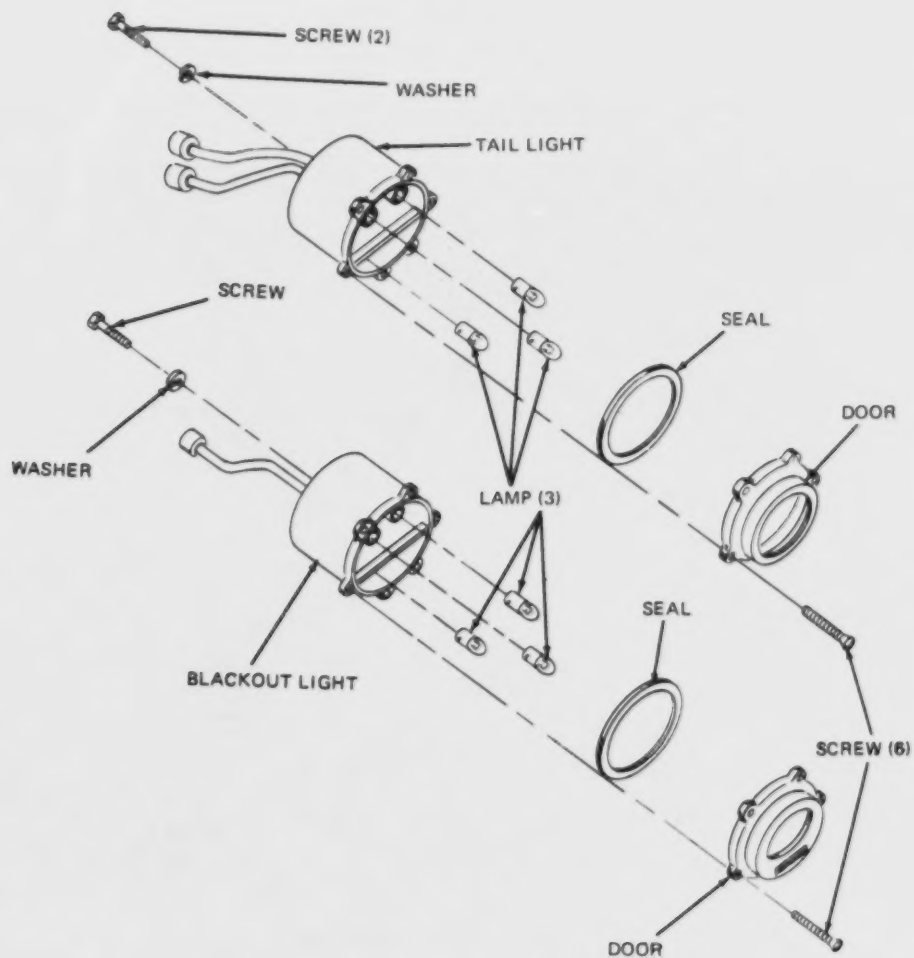
Page 78. Figure 52 ② .1 is added as follows:



C - Dolly lights installed (Model 5230D)

Figure 52 2 .1 - (Continued).

Page 79. Figure 53.1 is added as follows:



ME 3820-205-20/1/53.1 C/2

Figure 53.1. Tail and blackout light, partially exploded view (Model 5230D).

Page 83. Paragraph 111d is added after paragraph 111c as follows:

d. Installation (model 5230D).

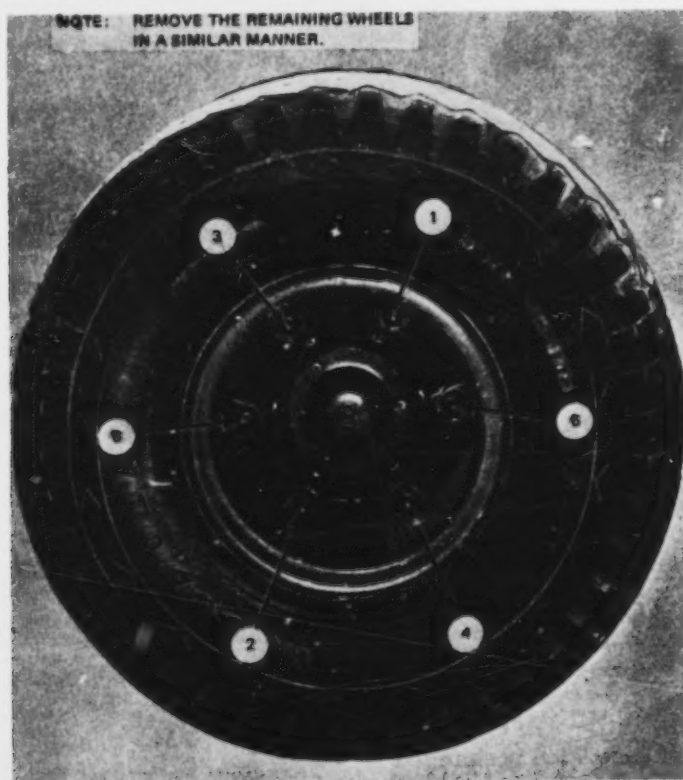
- (1) Slide inside tire and rim over spokes and push back into position.
- (2) Mount spacer ring.
- (3) Install rim clamp on each of the two top rim bolts and secure with one or two-turns on each nut (1 and 2, fig. 56.1).
- (4) Hang the outside tire and rim over these two clamps and hold in position.
- (5) Install the remaining four rim clamps and nuts and torque numbers 1, 2, 3, 4, 5,

and 6 to 180 to 200 ft-lb, in that order, turning each nut a quarter turn at a time until all are tight.

(6) Remove unit from the block, using a suitable lifting device, and road test approximately 10 miles. After first mile, fifth mile, and tenth mile, retorque nuts to 180 to 200 ft-lb. If torque value at the tenth mile has dropped below 180 ft-lb, remove wheels, investigate, and repeat entire procedure.

Caution: A trestle (Motor Vehicle Maintenance, 5-Ton) will be used in final torquing operations, taking care that drive extensions are parallel to the ground at all times.

Figure 56.1 is added after figure 56.



1. REMOVE NUT (2, 4, 5 & 6) AND RIM CLAMPS.
2. LOOSEN NUT (1 & 3).
3. LIFT OFF OUTSIDE TIRE AND RIM.
4. REMOVE NUT (1 & 3) AND RIM CLAMPS.
5. REMOVE SPACER RING.
6. SLIDE OFF INSIDE TIRE AND RIM.

ME 3820-205-20/1/56.1 C/2

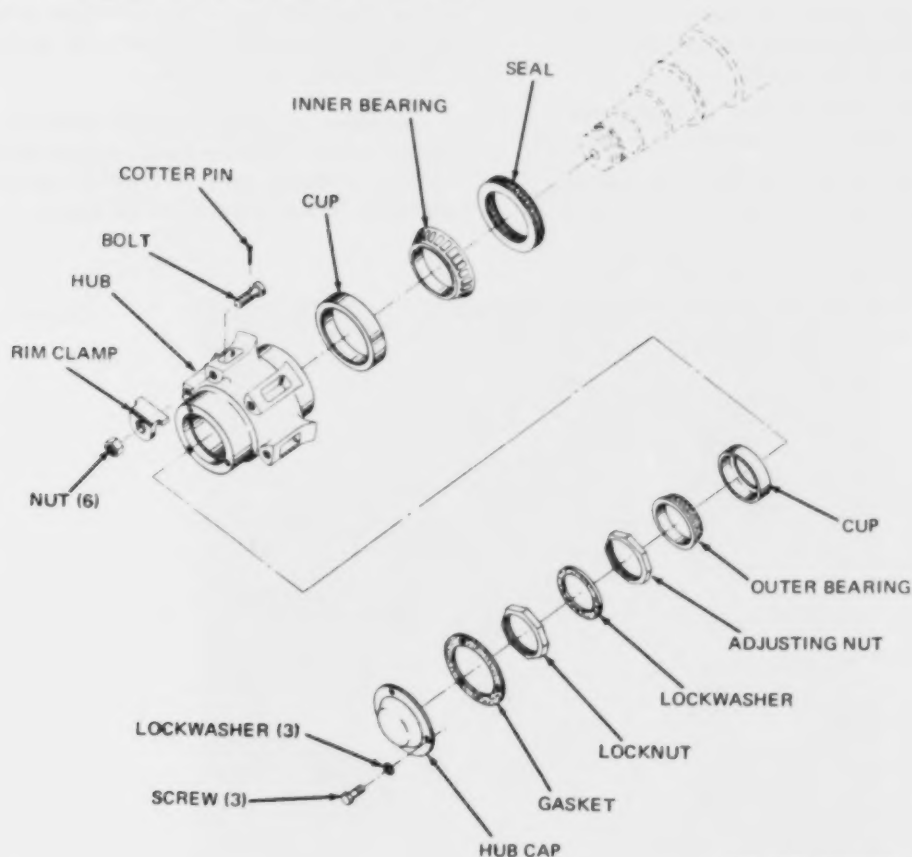
Figure 56.1 Dolly wheels, removal and installation (Model 5230D).

Paragraph 112c(1) is superseded as follows:

(1) To install the bearings and hub on

the axle, refer to figure 57 for Model 523OB and figure 57.1 for Model 523OD.

Page 84. Figure 57.1 is added as follows:



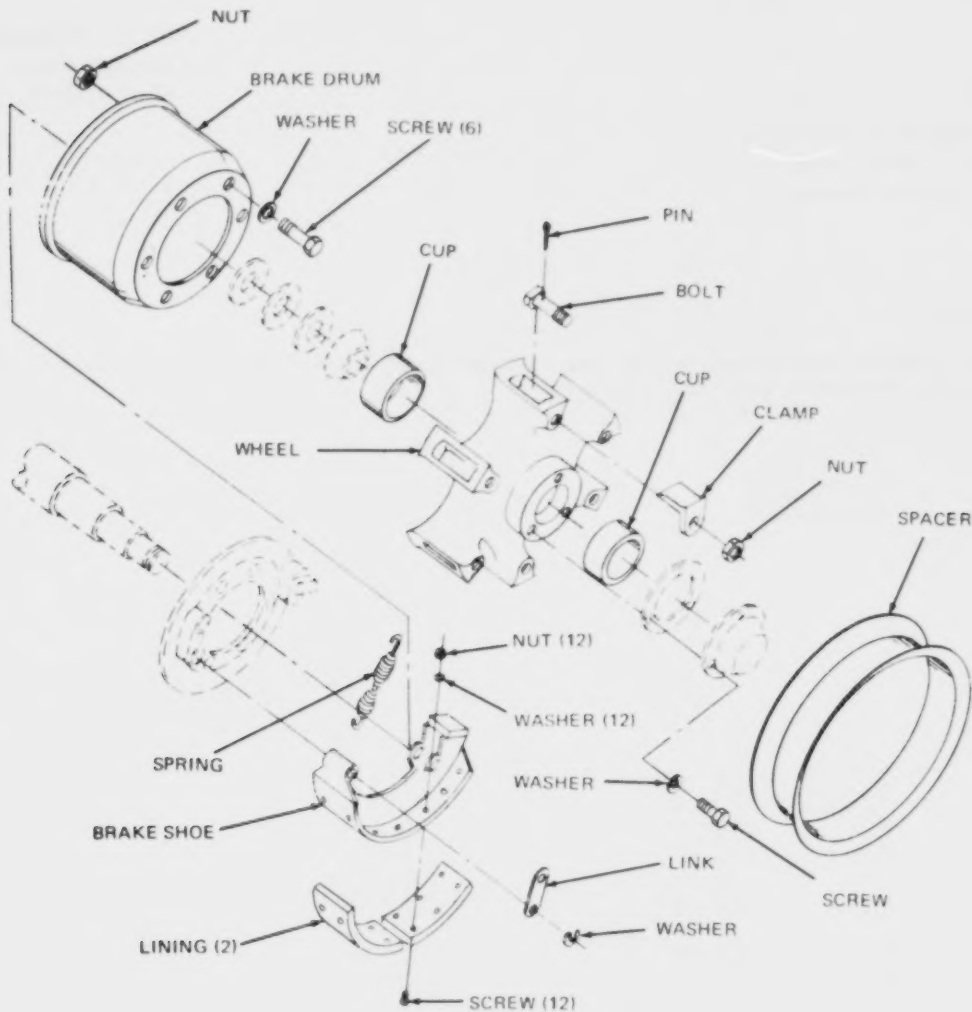
ME 3820-205-20/1/57.1 C/2

Figure 57.1. Wheel bearings and hub assembly, exploded view (Model 523OD).

Page 103. Caption on figure 71 B is changed to read as follows:

B — On units of equipment with serial number range 6590 through 6629 and Model 523OD.

Page 146. Figure 112.1 is added as follows:



NOTE: DISASSEMBLE REMAINING BRAKES IN A SIMILAR MANNER.

ME 3820-205-20/1 112.1 C/2

Figure 112.1. Brake assembly, exploded view (Model 5230D).

Last page (foldin).

So much of figure 1 — Continued as reads
"EMC 3820-205-20/1/1 (4) is changed to read
EMC 3820-205-20/1/1(5).

(Model 5230D)

Figure 1 (5). 1—Continued.

Located in back of manual

Figure 1 (5). 1 is added as follows:

By Order of the Secretary of the Army:

Official:

KENNETH G. WICKHAM,
*Major General, United States Army,
The Adjutant General.*

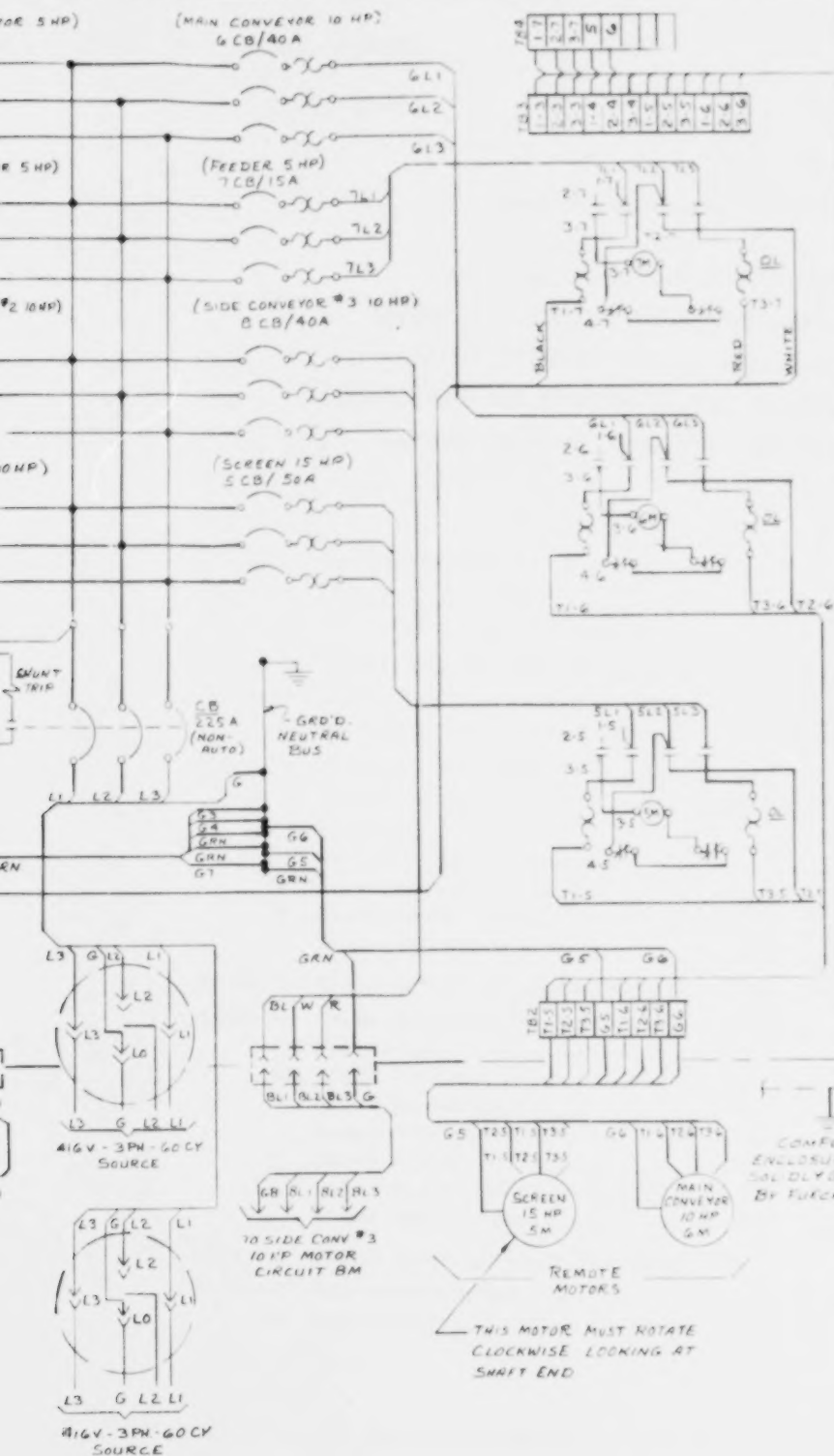
W. C. WESTMORELAND,
*General, United States Army,
Chief of Staff.*

Distribution:

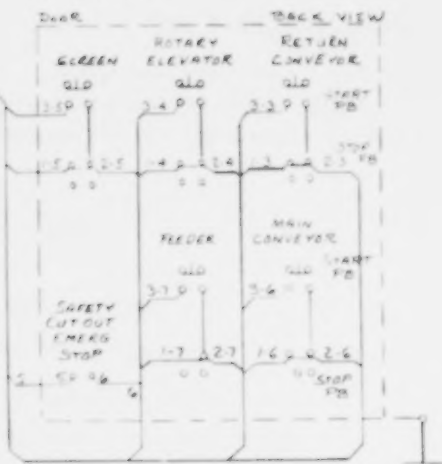
To be distributed in accordance with DA Form 12-25, Sec II (qty rqr Block No. 450), Organizational maintenance requirements for Rock Drilling Equipment, Crusher, Roll.



AND DISTRIBUTION PANEL



OPERATOR'S CONTROL STATION



COMPLETE
ENCLOSURE
TO BE SOLIDLY
GROUNDED BY
PURCHASER

WIRING TABLE		
WIRE NO.	TER	CONNECTIONS
1-3	3	3 M
2-3	3	3 M
3-3	3	3 M
1-4	3	4 M
2-4	3	4 M
3-4	3	4 M
1-5	3	5 M
2-5	3	5 M
3-5	3	5 M
1-6	3	6 M
2-6	3	6 M
3-6	3	6 M
1-7	4	7 M
2-7	4	7 M
3-7	4	7 M
5	4	ENERG STOP PB
		RELAY BLOCK
6	4	ENERG STOP PB
		MAIN RUX(PHASE 3)

TECHNICAL MANUAL
No. 5-3820-205-20/1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D. C., 28 February 1964

ORGANIZATIONAL MAINTENANCE MANUAL

CRUSHER, ROLL: DIESEL AND ELECTRIC DRIVEN;
WHEEL MOUNTED, PNEUMATIC TIRES; 75 TON PER HOUR
(EAGLE CRUSHER MODEL 5230B) FSN 3820-778-5999
COMPONENT OF CRUSHING AND SCREENING PLANT; DIESEL AND
ELECTRIC DRIVEN; WHEEL MOUNTED; 75 TON PER HOUR

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* This manual supersedes TM 5-3820-205-20/1, 11 August 1961, including C 1, 5 October 1962, and C 2, 22 May 1963.

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CHAPTER 1

INTRODUCTION

Section I. GENERAL

1. Scope

a. These instructions are published for the use of the personnel to whom the Roll Crusher, Eagle Model 5230B is issued. They provide information on organizational maintenance of the equipment, its accessories, and auxiliaries. This manual also includes instructions for shipment and limited storage.

b. Appendix I contains a list of publications applicable to this manual. Appendix II contains the maintenance allocation chart. The organizational maintenance repair parts and special tool lists are in TM 5-3820-205-20P/1.

c. Numbers in parentheses on illustrations indicate quantity. Numbers preceding nomenclature callouts on illustrations indicate the preferred maintenance sequence.

d. The direct reporting, by the individual user, of errors, omissions, and recommendations for improving this manual is authorized and encouraged. DA Form 2028 (Recommended

Changes to Technical Manual Parts Lists or Supply Manual 7, 8, or 9) will be used for reporting these improvements. This form will be completed in triplicate using pencil, pen, or typewriter. The original and one copy will be forwarded direct to the Commanding Officer, U. S. Army Mobility Support Center, ATTN: SMOMS-MM, P. O. Box 119, Columbus, Ohio 43216. One information copy will be provided to the individual's immediate supervisor (e.g., officer, noncommissioned officer, supervisor, etc.).

e. Report all equipment improvement recommendations as prescribed by TM 38-750.

2. Record and Report Forms

DA Form 2258 (Depreservation Guide of Engineer Equipment). For any other record and report forms applicable to organizational maintenance, refer to TM 38-750.

Note. Applicable forms, excluding Standard Form 46 which is carried by the operator, will be kept in a canvas bag mounted on the equipment.

Section II. DESCRIPTION AND DATA

3. Description

TM 5-3820-205-10/1 provides a general description of the roll crusher. Specific and detailed descriptions of the components of the lubrication and servicing unit are provided in the applicable maintenance paragraphs of this manual.

4. Identification and Tabulated Data

a. *Identification.* Descriptions and locations of major identification plates on the roll crusher are listed in TM 5-3820-205-10/1. The machine has eight identification plates on small, interchangeable components.

- (1) *Starter motor identification plate.* Provides make, model, serial number, and voltage of the starter motor. It is mounted on the starter housing.
- (2) *Generator identification plate.* Provides the make, model, serial number, amperes, and voltage rating of the generator. It is mounted on the generator housing.
- (3) *Generator Regulator Identification Plate.* Provides the make, model, serial number, amperes, voltage, and type of ground. It is located on the regulator housing.

(4) *Fuel injector pump identification plate.*

Provides the make, revolutions per minute, model, and serial number of the injection pump. It is located on the injector pump housing.

(5) *Overspeed governor identification plate.* Provides the make, range of speed, model, and serial number of the governor. It is located on the overspeed governor housing.

(6) *Engine safety control switch identification plate.* Provides the make, type, and serial number of the switch. It is located on the outside of the switch housing.

(7) *Air cleaner instruction and identification plates.* Provides air cleaner instructions. They are mounted on the body of the air cleaner.

(8) *Fire extinguisher identification and instruction plate.* Provides the make, model, Federal stock number, type and instructions for operating the fire extinguisher. It is located on the outside of the fire extinguisher.

b. Tabulated Data.

(1) *Engine.*

Manufacturer.....Continental Motors Corp.
Model.....SD 802
Number of cylinders.....6
Type.....Full diesel
Cycle.....4
Cooling.....Liquid cooled
Rated horsepower.....144 at 1,400 rpm (revolutions per minute)
Governed speed.....1,400 rpm
Firing order.....1-5-3-6-2-4

(2) *Generator.*

Manufacturer.....Delco-Remy Division of General Motors Corp.
Model.....1117478
Volts.....24
Amperes.....40
Brush spring tension (minimum).....28 oz (ounces)

(3) *Generator regulator.*

Manufacturer.....Delco-Remy Division of General Motors Corp.
Model.....1118558
Volts.....24
Amperes.....40
Ground.....Negative

(4) *Starter motor.*

Manufacturer.....Delco-Remy Division of General Motors Corp.
Model.....1109957
Volts.....24
Brush spring tension (minimum).....36 oz

(5) *Solenoid starter switch.*

Manufacturer.....Delco-Remy Division of General Motors Corp.
Model.....1119953
Volts.....24

(6) *Batteries.*

Manufacturer.....Electric Auto Lite Co.
Type.....Dry charge
Group.....6TN
Volts per battery.....12
Number of batteries.....4
Ground.....Negative

(7) *Engine air cleaner.*

Manufacturer.....Donaldson Co.
Part number.....SD610-0120
Type.....Dry

(8) *Fuel injection pump.*

Manufacturer.....Hartford Machine Screw Corp.
Model.....DGFCL 639-16B
Type.....Roosa-Master

(9) *Oil filters.*

Manufacturer.....Fram Corp.
Model.....F-31-PL
Type.....Replaceable element
Number used.....3

(10) *Fuel filter, primary.*

Manufacturer.....Fram Corp.
Model.....FBM 1824
Type.....Washable element

(11) *Fuel filter, secondary.*

Manufacturer.....Fram Corp.
Model.....F1127-APB
Type.....Replaceable element

(12) *Overspeed governor.*

Manufacturer.....Syncrostart Corp.
Model.....GOM

(13) *Crankcase air cleaner.*

Manufacturer.....Donaldson Co.
Type.....Oil Bath

(14) *Primer pump.*

Manufacturer.....Hartford Machine Screw Corp.
Type.....Plunger
Model.....12383

**(15) Feeder, return (under) conveyor,
and rotary elevator motors.**

Manufacturer..... General Electric Co.
Model..... 5KG215BG202
Type..... KG
Horsepower..... 5
Revolutions per minute..... 1,745
Volt..... 208-220/440
Phase..... 3
Cycle..... 60
Amperes..... 14.2/7.1
Time rating..... Continuous

(16) Vibrating screen motor.

Manufacturer..... General Electric Co.
Model..... 5KG4284B2
Type..... KG
Horsepower..... 15
Revolutions per minute..... 1,755
Volt..... 208-220/440
Phase..... 3
Cycle..... 60
Amperes..... 40.8/20.4
Time rating..... Continuous

(17) Main (feed) conveyor motor.

Manufacturer..... General Electric Co.
Model..... 5KG4256B2
Type..... KG
Horsepower..... 10
Revolutions per minute..... 1,745
Volt..... 208-220/440
Phase..... 3
Cycle..... 60
Amperes..... 27.4/13.7
Time rating..... Continuous

(18) Tires.

Size..... 11:00-15
Type..... LPT Nylon
Number of ply..... 20 ply rating

Pressure..... 100 psi (pounds per square
inch)

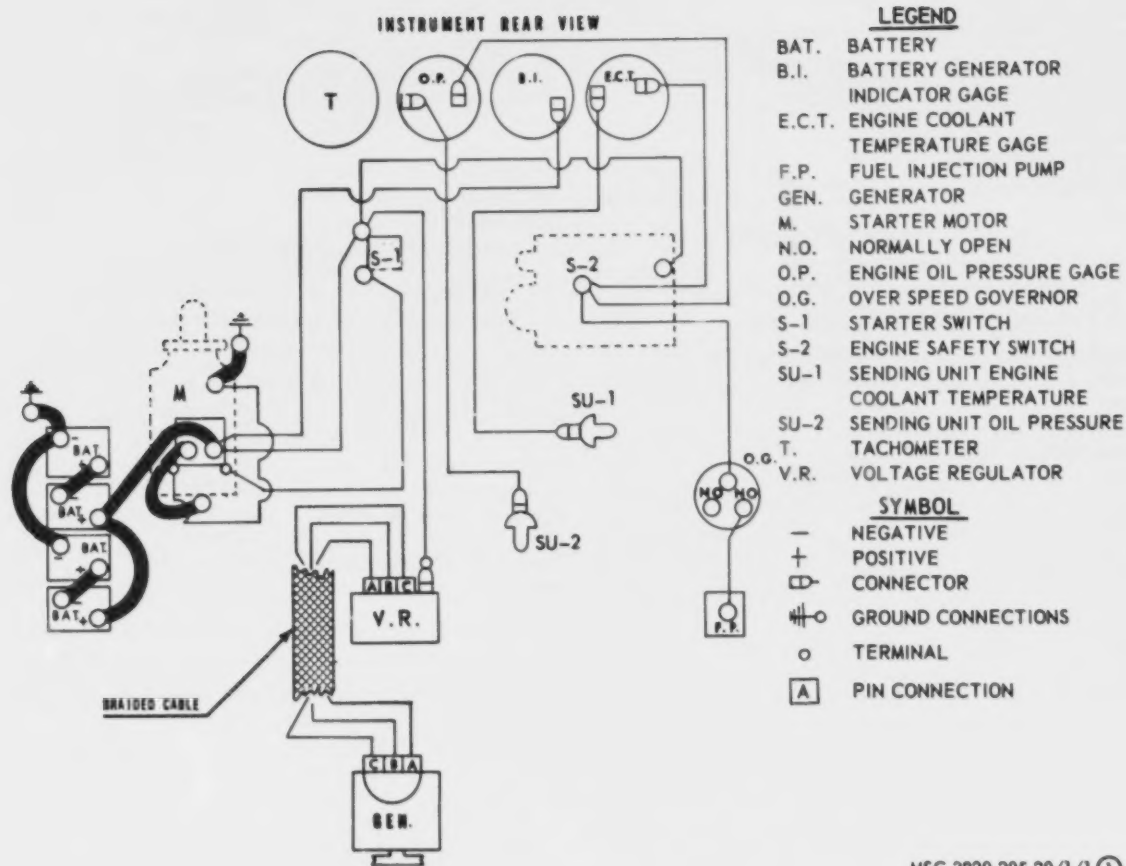
(19) Adjustments.

Fan Belts..... $\frac{3}{4}$ in. (inch) (es) de-
flection between pul-
leys on long side
Drive belts (electric motor)..... $\frac{1}{2}$ in. deflection between
pulleys
Main drive belt..... 1 to $1\frac{1}{4}$ in. deflection
between pulleys
Crusher rolls springs..... 23 in. spring length
Intake valves (hot)..... 0.020 in.
Exhaust valves (hot)..... 0.024 in.
Generator regulator:
Cutout relay air gap..... 0.048 in.
Cutout relay point opening..... 0.035 in.
Cutout relay closing
voltage..... 25-27 v (volts)
Current regulator air gap..... 0.115 in.
Current regulator current
setting..... 38 to 42 amp (amperes)
Voltage regulator air gap..... 0.084 in.
Voltage regulator closing
voltage..... 27.5-29.5 v
(when adjusting set at
middle of range)..... 28.5 v

(20) Nut and bolt torque data.

Intake manifolds..... 50-55 ft-lb (foot-
pounds)
Exhaust manifolds..... 50-55 ft-lb
Fuel injectors..... 14-16 ft-lb
Fuel line conenctor screws..... 420 in-lb (inch-pounds)
Wheel bearing adjusting nut..... 50 ft-lb
Wheel bearing outer locknut..... 250-400 ft-lb
Inner and outer wheel nuts..... 500-600 ft-lb

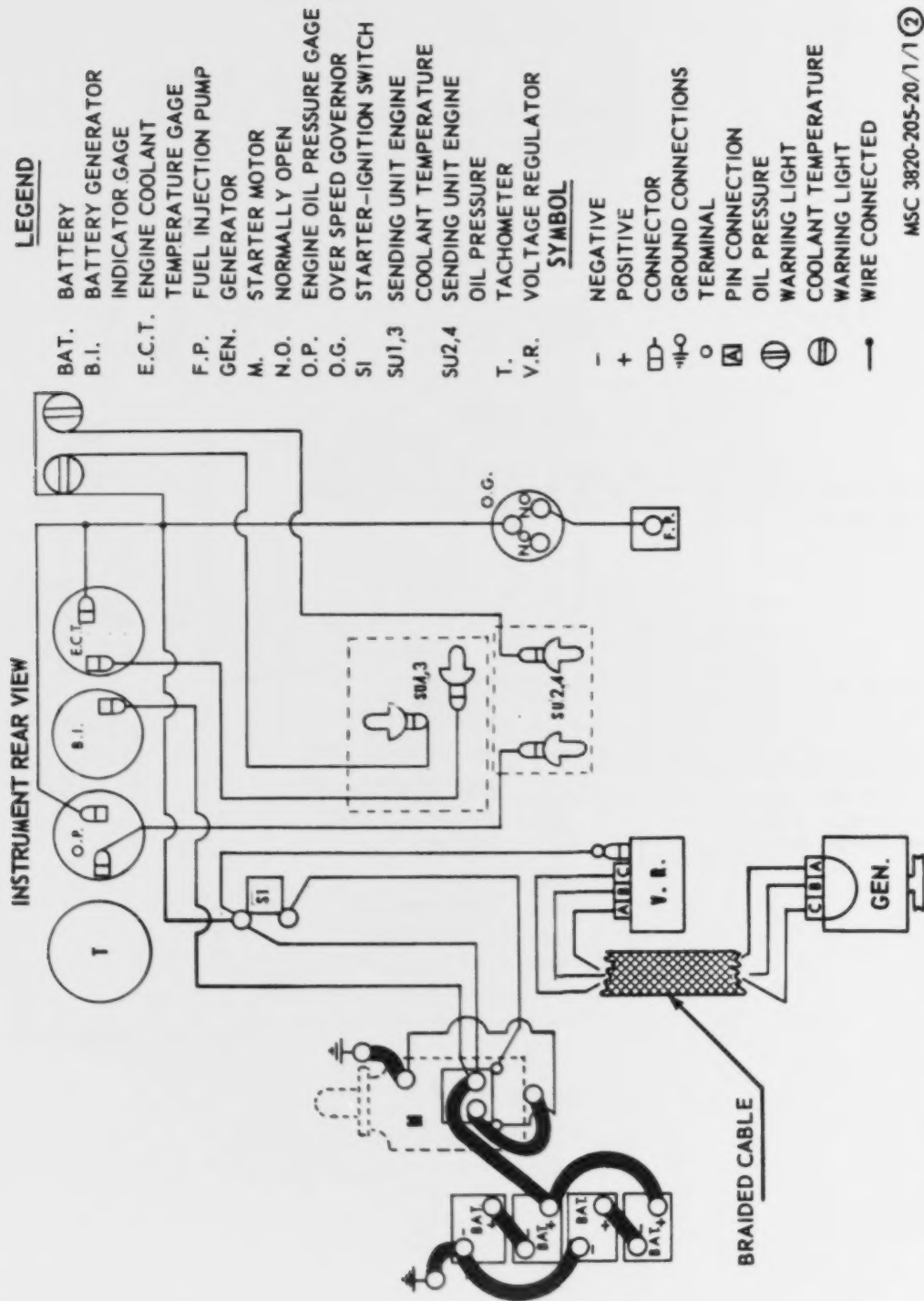
(21) Practical wiring diagram. The prac-
tical wiring diagram of the electrical
system is shown on figure 1.



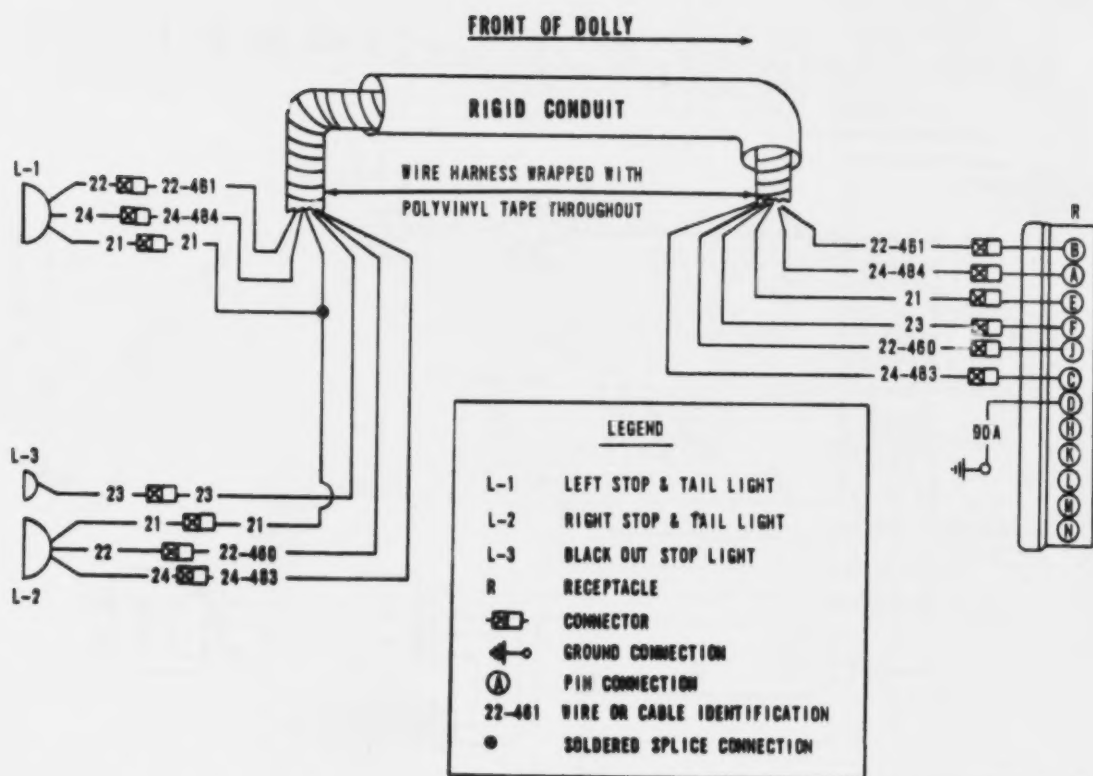
MSC 3820-205-20/1/1

(Serial number range 6550 through 6587)

Figure 1. Wiring diagram.



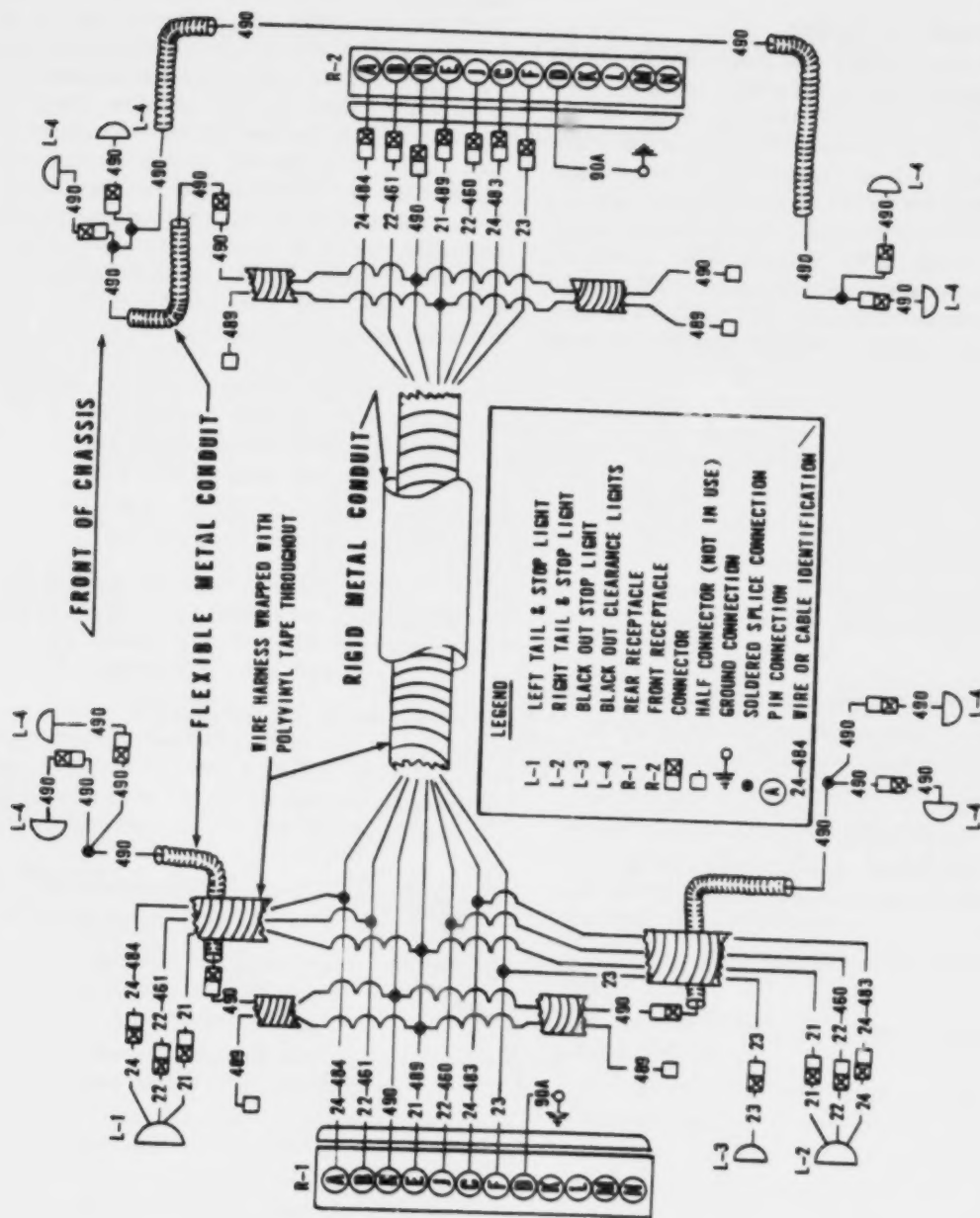
(Serial number range 6590 through 6629)
Figure 1—Continued.



MSC 3820-205-20/1/1 (3)

(Dolly wiring diagram)

Figure 1—Continued.



MSC 3820-205-20/1/1 ④

(Trailer wiring diagram)
Figure 1—Continued.

(Power distribution wiring diagram)

Figure 1—Continued.

(Located in back of manual)

5. Difference in Models

This manual covers the Eagle Model 5230B Roll Crusher, Serial Number ranges 6550 through 6587 and 6590 through 6629. Where differences exist between the two serial number ranges, each serial number range is covered separately in the applicable maintenance section of this manual. Units within serial number range 6590 through 6629 have two diesel engine air cleaners, units within serial number range 6550 through 6587 have one. Units within serial number range 6590 through

6629 have both coolant temperature and lubricating oil pressure warning lights, but the units within serial number range 6550 through 6587 do not. Units within serial number range 6590 through 6629 are equipped with a dual ignition starter switch, units within serial number range 6550 through 6587 are equipped with a separate switch for the ignition circuit and another switch for the starter energizing circuit. Units of equipment within serial number range 6590 through 6629 are equipped with a flexo-stick assembly, mounted on the drawbar assembly, which is used to suspend the hoses. On units within serial number range 6550 through 6587 the hoses are attached to the drawbar assembly with hose clips.

CHAPTER 2

INSTALLATION AND OPERATION INSTRUCTIONS

Section I. SERVICE UPON RECEIPT OF EQUIPMENT

6. Unloading Roll Crusher

a. Shipment by Rail.

- (1) *Blocking and tiedown removal.* Refer to figure 2 and remove all blocking and tiedown devices. The operator may assist in unloading.
- (2) *Ramp unloading.* Block the flatcar wheels and construct a suitable ramp at the end of the flatcar (fig. 3). Tow the roll crusher from the flatcar.

Note. Secure the flatcar wheels, both front and back, with 6 x 6 timber blocks.

b. Lifting the Roll Crusher. Attach lifting cables to the four lifting eyes (fig. 4) and with a lifting device of at least 30 ton capacity, lift the roll crusher from the flatcar.

Warning: When lifting entire roll crusher use main lifting eyes only. They can be located by the stenciled markings "LIFT HERE". Two lifting eyes are located on the rear of vibrating screen, and two on the rear of roll crusher.

7. Unpacking the Roll Crusher

a. Unpacking.

- (1) Inspect the equipment against the packing list and report discrepancies to the proper authority.
- (2) Remove the battery electrolyte box and cables from the toolbox.

Note. Do not uncrate electrolyte until equipment is ready for use.

- (3) Remove the fire extinguisher and remaining items from the toolbox.

b. Removal of Protective Material and Devices.

- (1) Prior to inspection or operation, depreserve the roll crusher as outlined

on the DA Form 2258 which will be attached on or near the operator's controls.

- (2) Remove all weatherproofed tape from the vehicle lights, instruments, mufflers, electrical terminals, air brake hose connections, and all taped openings on the engine.
- (3) Remove the preservative from the battery cable ends.
- (4) Open the top of the electrolyte box and remove the bottles of electrolyte.

Warning: Use care in handling the bottles of electrolyte, as electrolyte spilled on the skin can cause severe burns.

8. Inspecting and Servicing the Roll Crusher

a. Perform the quarterly preventive maintenance services listed in paragraph 18.

b. Inspect the roll crusher for loss or damage which may have occurred during shipment.

c. Inspect drain plugs, breathers, fill caps, and draincocks to be sure they are secured and not leaking or damaged.

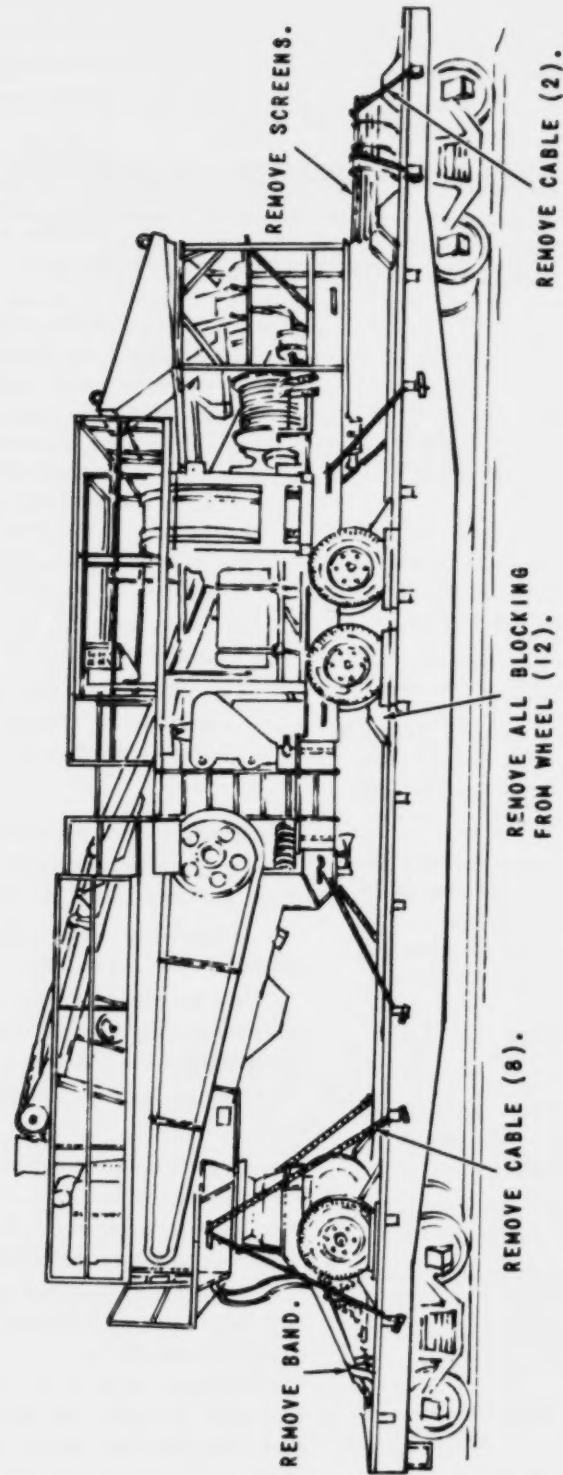
d. Inspect all components for proper mountings.

e. Inspect all belts for proper alignment (TM 5-3820-203-10/1).

f. Inspect tires, belts, hoses, cable leads for cracks or signs of deterioration.

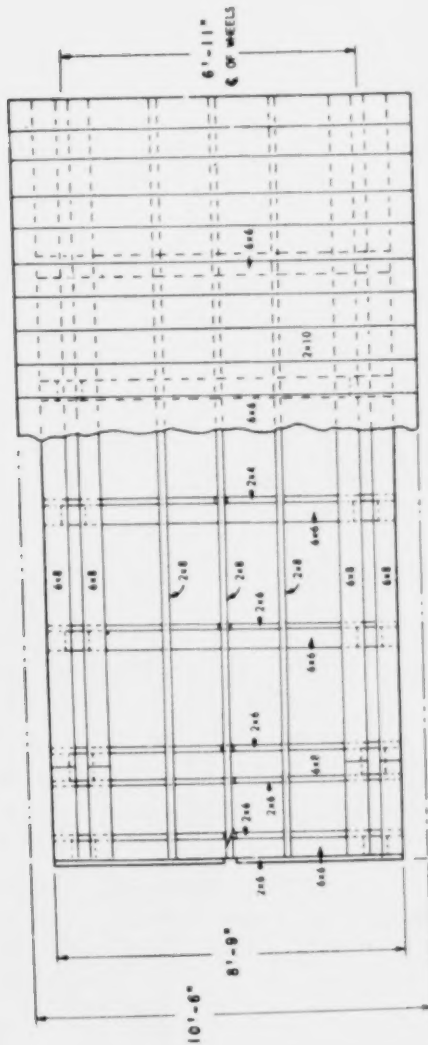
g. Inspect wiring, fuel and oil lines, radiator, fuel tank, gages, instruments, and lights for defective condition.

h. Remove caps from the cells of the battery and fill with the electrolyte to a level of three-eighths inch above the plates. For servicing and testing wet batteries, refer to TM 9-6140-200-15.



EMC 3820-205-20/1/2

Figure 2. Roll crusher, blocking and tiedown removal.



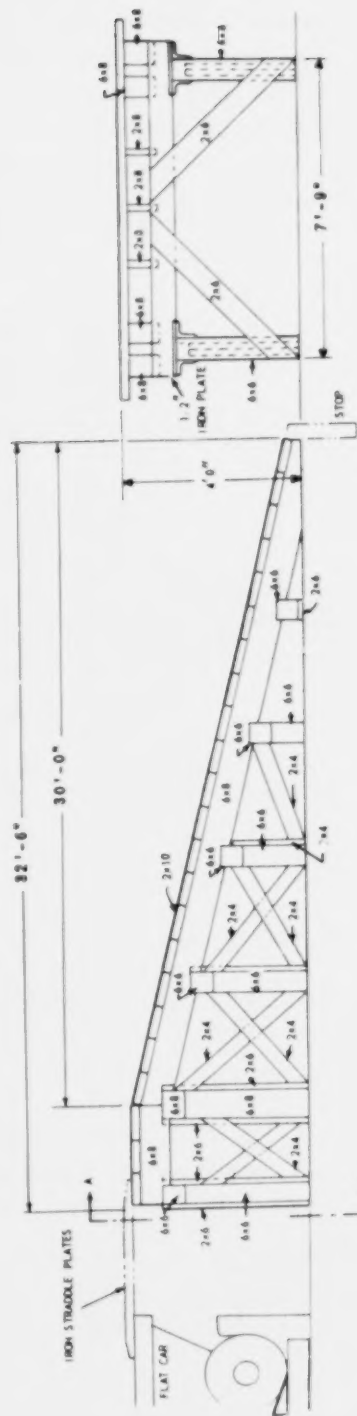
NOTES

(UNLESS OTHERWISE NOTED)

1. SCALE - NONE
2. MATERIAL - 6x8, 6x6, 2x6 (OAK THREE, COMMON)

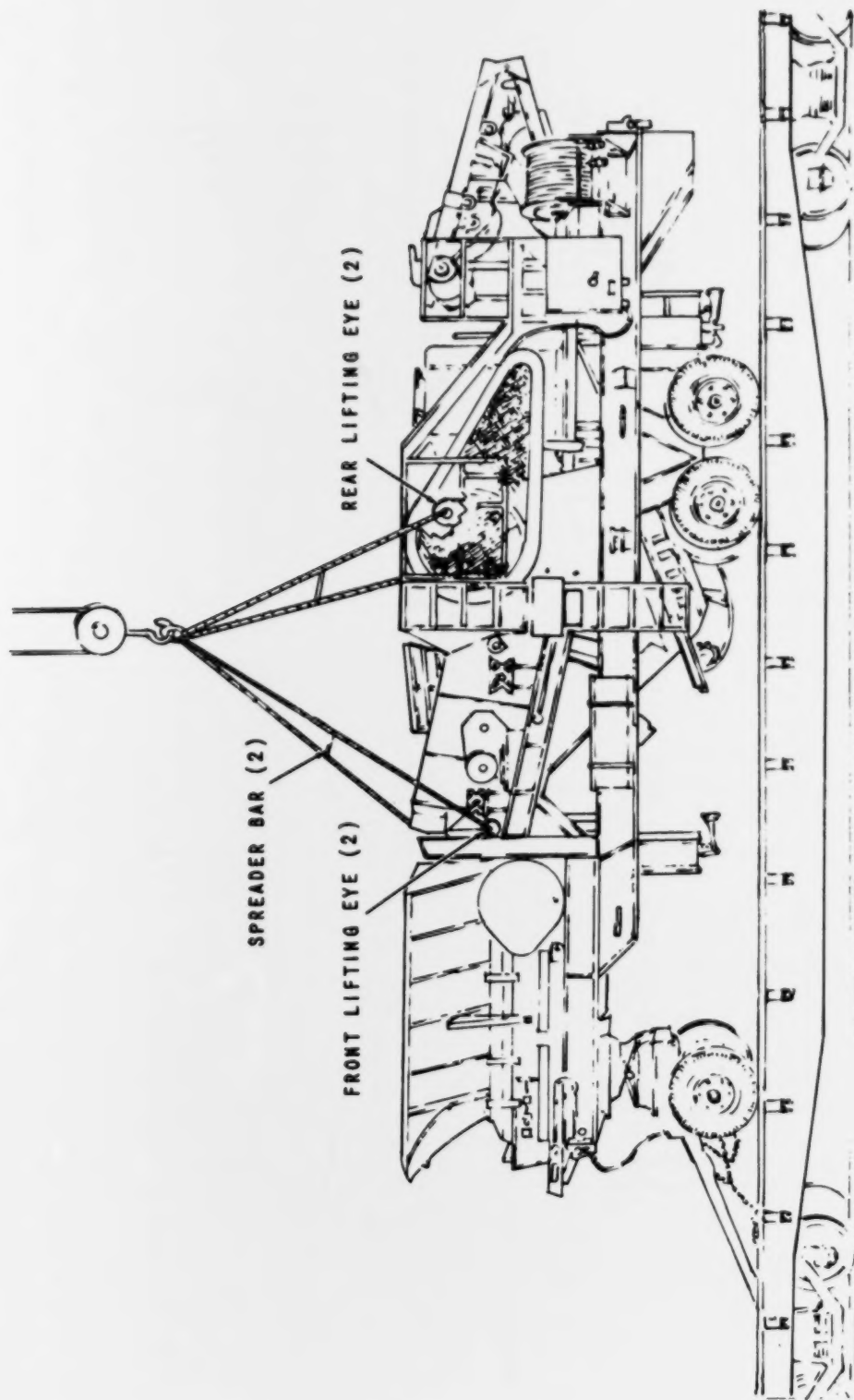
2x10 AND 2x4
(TIMBER OPTIONAL)

3. ADDITIONAL VERTICAL SUPPORT MEMBERS WILL BE REQUIRED AND ARE TO BE PLACED ON 3-FOOT CENTERS. ALL TIMBERS SHALL BE SAME SIZE AS NOTED.



EMC 3820-205-20/2/3

Figure 3. Unloading ramp construction.



ENC 3820-205-20/2/4

Figure 4. Lifting with a lifting device.

Warning: When servicing battery, do not smoke or use open flame in the vicinity. Batteries generate hydrogen, a highly explosive gas.

i. Lubricate the roll crusher according to the current lubrication order (LO 5-3820-205-20/1).

j. Fill cooling system with proper coolant to protect cooling system to lowest temperature expected. For cold-weather operation, refer to TM 9-207. Table I lists the freezing points, composition, and specific gravities of military antifreeze materials.

Table I. Freezing Points, Composition, and Specific Gravities of Military Antifreeze Materials.

Lowest expected ambient temp ° F.	Pints of inhibited glycol per gal of coolant ¹	Compound, Antifreeze Arctic ²	Ethylene glycol solution specific gravity at 68° F. ³
+20	1½	Issued full strength and ready mixed for 0° F. to -65° F. temperatures for both initial installation and replenishment of losses.	1.022
+10	2		1.036
0	2½		1.047
-10	3¼		1.055
-20	3½		1.062
-30	4	DO NOT DILUTE WITH WATER OR ANY OTHER SUBSTANCE.	1.067
-40	4¼		1.073
-50	Arctic Anti-freeze		
-60	preferred.		
-75			

¹ Maximum protection is obtained at 60 percent by volume, that is 4.8 pints of ethylene glycol per gallon of solution.

² Military Specification MIL-C 11755 Arctic type, nonvolatile antifreeze compound is intended for use in the cooling system of liquid-cooled internal combustion engines for protection against freezing primarily in Arctic regions where the ambient temperature remains for extended periods of time close to -40° F. or drops below, to as low as -90° F.

³ Use an accurate hydrometer. To test hydrometer, use 1 part ethylene glycol antifreeze to 2 parts water. This should produce a hydrometer reading of 0° F.

Note. Fasten a tag near the radiator filler cap indicating the types of antifreeze.

k. On new equipment flush the fuel lines and fuel filters as follows:

- (1) Disconnect fuel line from filter at fuel pump end as instructed on figure 5.
- (2) Drain the fuel filter (TM 5-3820-205-10/1).
- (3) Flush fuel lines and filters by operating the primer pump (TM 5-3820-205-10/1).
- (4) Connect fuel line at fuel pump.
- (5) Disconnect fuel lines from injectors.
- (6) Operate starter for 30 seconds (TM 5-3820-205-10/1).
- (7) Connect fuel lines to injectors.
- (8) Disconnect the fuel return line, remove the elbow, and install a plug in the pipe tee.

(9) Start the engine (TM 5-3820-205-10/1).

(10) Stop the engine, remove the plug from the tee, install the elbow, and connect the return fuel line.

9. Installation of Separately Packed Components

a. Install the fire extinguisher in the bracket on the right side of the roll crusher.

b. Unpack and depreserve the battery cables (par. 7). Install the battery cables on the batteries (par. 76c).

c. Install the necessary sized screens for desired operation (TM 5-3820-205-10/1).

10. Installation or Setting Up Instructions

For installation and setting-up instructions, refer to TM 5-3820-205-10/1.

Section II. MOVEMENT TO A NEW WORKSITE

11. Dismantling for Movement

Dismantle roll crusher for movement as instructed in TM 5-3820-205-10/1.

12. Reinstallation After Movement

Reinstall roll crusher for operation as instructed in TM 5-3820-205-10/1.

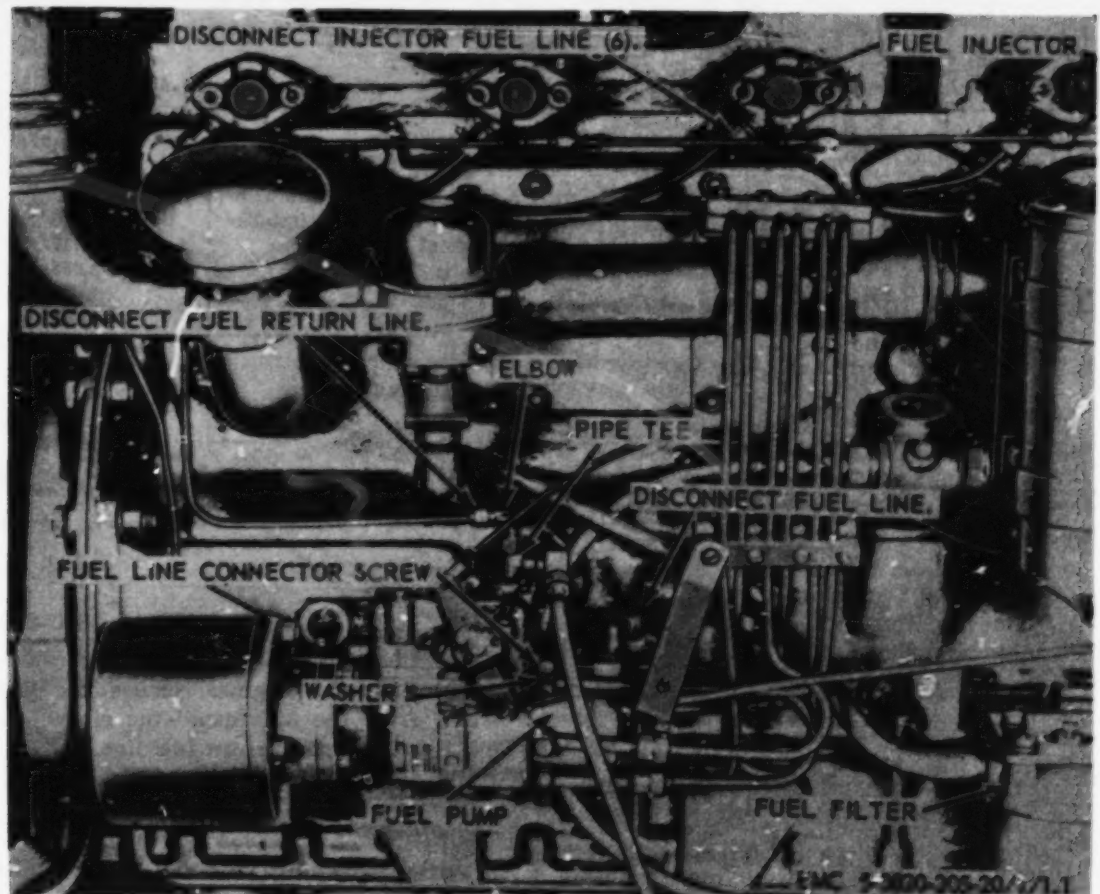


Figure 5. Fuel pump, filters, and lines.

CHAPTER 3

GENERAL MAINTENANCE INSTRUCTIONS

Section I. SPECIAL TOOLS AND EQUIPMENT

13. Special Tools and Equipment

No special tools or equipment are required by organizational maintenance personnel to perform maintenance on the roll crusher.

14. Organizational Maintenance Repair Parts

Organizational maintenance repair parts are listed and illustrated in TM 5-3820-205-20P/1.

Section II. LUBRICATION

15. General

This section contains instructions for the lubrication of the wheel bearing assemblies and starter inboard bearing. Refer to current lubrication order for proper time interval and the type and grade of lubricant to be used.

16. Lubricating Wheel Bearing Assemblies

a. Wheel Removal and Disassembly. For wheel removal and disassembly, refer to paragraph 112.

b. Cleaning, Inspection, and Lubrication.

- (1) Clean wheels, hubs, and bearing assemblies with approved cleaning solvent and dry thoroughly with a clean, lint free cloth.

- (2) Inspect all parts for excessive wear or damage. Replace any unserviceable parts.

- (3) Pack wheel bearing assemblies with the type and grade of grease indicated on the current lubrication order.

c. Wheel Reassembly and Installation. For wheel reassembly and installation, refer to paragraph 112.

17. Lubricating the Starter Inboard Bearings

a. Starter Removal. Remove the starter (par. 82).

b. Cleaning, Inspection, and Lubrication. Lubricate the starter inboard bearings in accordance with LO 5-3820-205-20/1.

c. Starter Installation. Install the starter (par. 82).

Section III. PREVENTIVE MAINTENANCE SERVICES

18. General

To insure that the roll crusher is ready for operation at all times, it must be inspected systematically, so that defects may be discovered and corrected before they result in serious damage or failure. The necessary preventive maintenance services to be performed are listed and described in paragraph 18. The item numbers indicate the sequence of minimum inspection requirements. Defects discovered during operation of the unit will be noted for future correction, to be made as soon as operation

has ceased. Stop operation immediately if a deficiency is noted during operation which would damage the equipment if operation were continued. All deficiencies and shortcomings will be recorded together with the corrective action taken on DA Form 2404 at the earliest possible opportunity.

19. Quarterly Preventive Maintenance Services

a. This paragraph contains an illustrated tabulated listing of preventive maintenance services which must be performed by organi-

zational maintenance personnel at quarterly intervals. A quarterly interval is equal to 3 calendar months or 250 hours of operation, whichever occurs first.

b. The item numbers are listed consecutively and indicate the sequence of minimum requirements. Refer to figure 6 for the quarterly preventive maintenance services.

Section IV. TROUBLESHOOTING

20. General

This section provides information useful in diagnosing and correcting unsatisfactory operation or failure of the roll crusher and its components. Each trouble symptom stated is followed by a list of probable causes of the trouble. The possible remedy recommended is described opposite the probable cause. Any trouble beyond the scope of organizational maintenance must be reported to field maintenance, 3d echelon.

21. Starter Fails To Crank Engine

<i>Probable cause</i>	<i>Possible remedy</i>
Poor electrical connections.	Clean and tighten battery cables and other electrical connections.
Starter switch defective.....	Replace starter switch (par. 88).
Batteries discharged.....	Charge batteries or replace defective batteries. Inspect generator output and replace brushes or generator as necessary (par. 80).
Starter brushes worn.....	Replace starter brushes (par. 82).
Starter solenoid defective.....	Replace defective starter solenoid (par. 81).

22. Engine Hard To Start or Fails To Start

<i>Probable cause</i>	<i>Possible remedy</i>
Battery charge low.....	Charge or replace batteries. Inspect generator output and replace brushes or generator as necessary (par. 80).
Fuel lines clogged.....	Clean fuel lines (par. 65).
Fuel injector pump defective.	Replace fuel pump. Report this condition to field maintenance, 3d echelon.
Fuel injectors dirty.....	Replace fuel injectors (par. 61).
Rocker arm clearance incorrect.	Adjust rocker arms (par. 97).
Fuel injection pump timing incorrect.	Time injection pump. Report this condition to field maintenance, 3d echelon.
Starter defective.....	Replace starter (par. 82).
Defective air cleaner.....	Replace the air cleaner (par. 59).
Fuel tank valve closed.....	Open fuel tank valve.

23. Engine Misses or Runs Erratically

<i>Probable cause</i>	<i>Possible remedy</i>
Rocker arm clearance incorrect.	Adjust rocker arms (par. 97).
Fuel injectors defective.....	Replace fuel injectors (par. 61).
Fuel pump defective.....	Report this condition to field maintenance, 3d echelon.

24. Engine Stops Suddenly

<i>Probable cause</i>	<i>Possible remedy</i>
Fuel injection pump defective.	Replace fuel injection pump. Report this condition to field maintenance, 3d echelon.
Engine temperature too high (engine safety switch operates).	Remove and test thermostat (par. 103). Replace defective thermostat (par. 103).
Oil pressure low (engine safety switch operates).	Inspect for and repair leaks in oil lines (par. 71).
Engine safety switch defective.	Replace engine safety switch (par. 87).
Overspeed governor defective.	Replace overspeed governor (par. 86).

25. Engine Overheats

<i>Probable cause</i>	<i>Possible remedy</i>
Thermostat defective.....	Replace thermostat (par. 103).
Fan belts worn and slipping on pulley.	Replace fan belts (par. 100).
Fuel injection pump timing incorrect.	Time injection pump. Report this condition to field maintenance, 3d echelon.
Defective water pump.....	Replace water pump (par. 101).
Back pressure in exhaust system.	Inspect for restriction in muffler and exhaust system and clean (pars. 73 and 74).

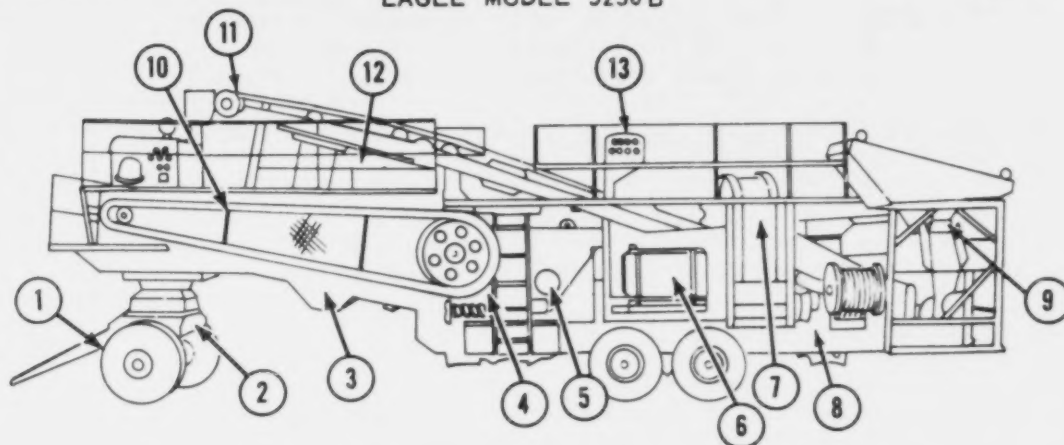
26. Engine Lacks Power or Will Not Idle Smoothly

<i>Probable cause</i>	<i>Possible remedy</i>
Rocker arm clearance incorrect.	Adjust rocker arms (par. 97).
Engine operating temperature low.	Replace defective thermostat (par. 103).
Fuel injectors defective.....	Replace defective fuel injectors (par. 61).
Fuel pump defective.....	Report this condition to field maintenance, 3d echelon.
Restricted fuel supply or air in system.	Remove fuel lines and clean (par. 65). Bleed fuel system (TM 5-3820-205-10/1).

TM 5-3820-205-20/1

EAGLE MODEL 5230 B

ROLL CRUSHER



LUBRICATE IN ACCORDANCE WITH CURRENT LUBRICATION ORDER

ITEM

PAR. REF

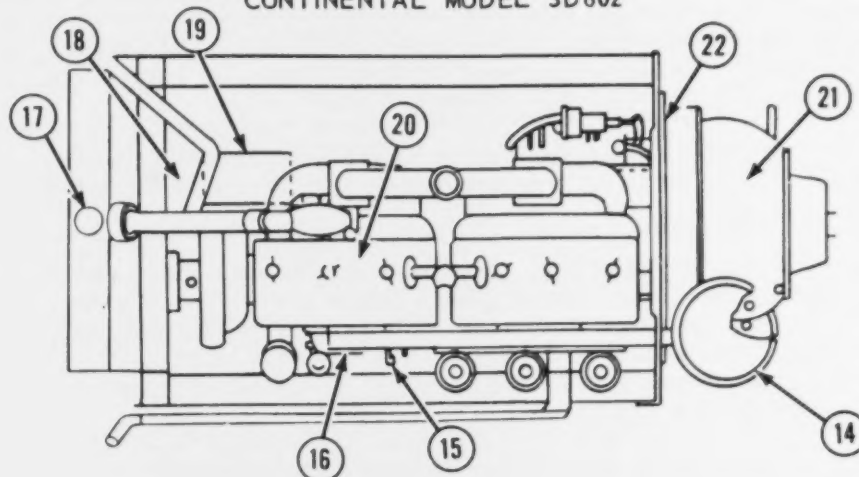
1	TIRES. Inspect for cuts, wear, and deterioration. Check pressure. Proper pressure is 100 psi.	
2	CRUSHER AND DOLLY ELECTRICAL SYSTEM. Check for deteriorated or frayed wiring. Check lights for proper operation. Check motors and junction boxes for cracks, breaks, and excessive noises or vibration during operation.	
3	HOPPERS AND CHUTES. Check control levers for proper operation. Check hopper liners for excessive wear. Replace liners before worn through. Check deflectors for wear and proper adjustment. When hopper is loaded, deflectors should barely touch conveyor belt.	
4	FIRE EXTINGUISHER. Inspect for full charge by shaking for sound or by weighing. Check for broken seal.	
5	ROLL CRUSHER ASSEMBLY. Check for cracks, breaks, and proper operation. Check tension spring for proper adjustment. Adjust spring to 23 inches in length.	162

Figure 6. Quarterly preventive maintenance services.

ITEM		PAR. REF
6	<u>FUEL TANK.</u> Check for leaks. Check fuel level.	
7	<u>ROTARY ELEVATOR ASSEMBLY.</u> Check for cracks, breaks, and proper operation. Check wheel trunnion and guard adjustments.	159
8	<u>AIR SYSTEM.</u> Check lines and hoses for breaks, leaks, and proper operation. Drain condensation from reservoir and filters. Check brakes for proper adjustment.	131
9	<u>RECIPROCATING FEEDER ASSEMBLY.</u> Check for cracks, breaks, and proper operation.	
10	<u>DRIVE BELTS.</u> Check for excessive wear or frayed condition. Check for proper operation and adjustment. Proper adjustment is 1 to 1-1/2 inch deflection between pulleys.	119 120
11	<u>BELT CONVEYOR ASSEMBLIES.</u> Check for cracks, breaks, and proper operation. Check conveyor belts for excessive wear, tears, frayed condition, proper adjustment, and alinement. Conveyor belt should be adjusted just enough to prevent slipping when loaded. To adjust trough rollers and aline conveyor belt, loosen mounting capscrews and shift trough roller assembly. Check rollers for excessive wear, material buildup, and defective bearings. Check belt scrapers for excessive wear and proper adjustment. Adjust belt scrapers so they barely touch conveyor belt.	150 thru 156
12	<u>VIBRATOR SCREEN ASSEMBLY.</u> Check for cracks, breaks, and proper operation. Check rubber deflectors and mountings for excessive wear and deterioration.	
13	<u>OPERATOR'S ELECTRICAL CONTROL BOX.</u> Inspect for loose connections and proper operation. Check for broken or damaged switches, relays, and circuit breakers. Inspect for faulty pushbutton switches. Check control box for tight seal. Check ground rod for loose connections and proper ground.	

Figure 6—Continued.

CONTINENTAL MODEL SD802



ENGINE

LUBRICATE IN ACCORDANCE WITH CURRENT LUBRICATION ORDER

ITEM

PAR. REF

14	<u>AIR CLEANER.</u> Check to see if red signal is visible.	
15	<u>LUBRICATING SYSTEM.</u> Check engine oil level. Add oil to correct level. Correct lubricant leaks. Lubricate in accordance with current LO.	
16	<u>FUEL SYSTEM.</u> Drain water and sediment from fuel filters and check for dirty elements. Every 1000 hours check governor adjustment. Proper governed speed is 1,400 rpm. Correct fuel leaks.	
17	<u>COOLING SYSTEM.</u> Check coolant level. Fill to 2 inches below filler neck. Check for correct antifreeze solution. Clean radiator air passages and correct all coolant leaks.	
18	<u>FAN BELTS.</u> Check for excessive wear or frayed condition and proper tension. Correct tension is 3/4 to 1 inch deflection midway between pulleys.	
19	<u>ENGINE ELECTRICAL SYSTEM.</u> Check starter, generator, and regulator for proper operation. Every 1000 hours check generator brushes. Check battery electrolyte level and specific gravity. Fill to 3/8 inch above plates. In freezing weather run engine for 1 hour after adding water. Tighten all loose connections. Replace defective wiring. Proper belt deflection is 3/4 to 1 inch.	

Figure 6—Continued.

ITEM		PAR. REF
20	<u>VALVE MECHANISM.</u> Check valves every 1000 hours for proper adjustment. Proper adjustment is 0.020 inch for intake valves and 0.024 inch for exhaust. (HOT)	
21	<u>MASTER CLUTCH.</u> Check for proper operation and adjustment. Adjust clutch until a firm pressure is required to engage clutch.	
22	<u>CONTROLS AND INSTRUMENTS.</u> Inspect controls and instruments for damage and loose connections. With the unit operating, inspect for improper operation. Normal operating readings for instruments are as follows: Oil pressure gage - 55 to 65 psi, Water temperature gage - 165° to 185°F, Ammeter - green range, Tachometer - 1,400 rpm.	
	<u>NOTE. OPERATIONAL TEST.</u> During operation check for unusual noise or vibration, leaks, and proper operation.	

MSC 3820-205-20/1/4.1

Figure 6—Continued.

27. Engine Knocks or Develops Excessive Noise

<i>Probable cause</i>	<i>Possible remedy</i>
Rocker arm clearance incorrect.	Adjust rocker arms (par. 97).
Worn main or connecting rod bearings. Loose piston pin. Broken piston or ring, loose or worn timing gears.	Report this condition to field maintenance, 3d echelon.
Injection pump timing incorrect.	Report this condition to field maintenance, 3d echelon.

28. Engine Has Low or No Oil Pressure

<i>Probable cause</i>	<i>Possible remedy</i>
Oil pressure gage defective.	Replace oil pressure gage and sending unit (par. 83).
Oil too light or diluted.	Drain and replace with proper lubricant (LO 5-3820-205-20/1).
Oil pressure line and fittings to engine safety switch leaking or defective.	Replace line and fittings (par. 71).
Dirt in oil cooler bypass valve or broken spring.	Clean oil cooler bypass valve and replace spring if necessary (par. 68).

29. Engine Exhaust Smokes

<i>Probable cause</i>	<i>Possible remedy</i>
Engine temperature low.	Test and replace thermostat (par. 103).
Fuel injectors defective or dirty.	Replace fuel injectors (par. 61).
Poor grade diesel fuel.	Drain fuel system and replace with proper grade of fuel.
Worn or sticking rings, worn valve guides and seals.	Report this condition to field maintenance, 3d echelon.
Restriction in air supply.	Check and clean air cleaner (TM 5-3820-205-10/1).

30. High Oil Consumption

<i>Probable cause</i>	<i>Possible remedy</i>
Oil leaks.	Locate and repair leaks.
Too high oil level maintained	Check oil level and fill to indicated full mark on bayonet gage.
Incorrect grade oil.	Refer to current lubrication order and fill with proper grade oil.
Oil pressure too high, relief valve sticking.	Clean and free oil cooler bypass valve spring (par. 68).
Worn, broken, or sticking rings, worn bearings or valve guide.	Report this condition to field maintenance, 3d echelon.

31. Power Takeoff Clutch Slips or Grabs

<i>Probable cause</i>	<i>Possible remedy</i>
Clutch out of adjustment.	Adjust clutch (TM 5-3820-205-10/1).
Worn clutch linings, broken throwout yoke or springs. Oil-soaked linings, warped clutch plates.	Report this condition to field maintenance, 3d echelon.

32. Batteries Fail to Maintain Charge

<i>Probable cause</i>	<i>Possible remedy</i>
Electrolyte below proper level.	Fill to the proper level with clean distilled water (par. 8).
Generator brushes worn or generator defective.	Replace generator brushes (par. 80). Test and replace generator (par. 80).
Generator regulator defective.	Test and replace generator regulator (par. 79).
Connections in wiring shorted or loose.	Repair all wiring that has shorts or tighten all loose connections (par. 89).

33. Reciprocating Feeder Does Not Operate

<i>Probable cause</i>	<i>Possible remedy</i>
Feeder electric motor drive belt worn or broken.	Replace feeder electric motor drive belt (par. 119).
Drive sheave on feeder electric motor or gear reducer defective.	Replace drive sheave (par. 122).
Defective gear reducer.	Replace gear reducer (par. 146).
Feeder electric motor magnetic starter switch or wiring defective.	Replace magnetic starter switch (par. 129) and repair wiring.
Feeder electric motor defective.	Replace feeder electric motor (par. 130).
Electric motor control switch heater defective.	Replace defective control switch heater (par. 129).

34. Rotary Elevator Inoperative

<i>Probable cause</i>	<i>Possible remedy</i>
Rotary elevator electric motor drive belt worn or broken.	Replace elevator electric motor drive belt (par. 119).
Drive sheave on elevator motor or gear reducer defective.	Replace drive sheave (par. 122).
Electric motor control switch heater defective.	Replace defective motor control switch heater (par. 129).
Elevator electric motor magnetic starter switch or wiring defective.	Replace magnetic starter switch (par. 129). Repair wiring.
Elevator electric motor defective.	Replace elevator electric motor (par. 130).
Defective gear reducer.	Replace gear reducer (par. 146).
Elevator rollers defective.	Replace rollers (par. 158).

35. Roll Crusher Does Not Operate Properly

<i>Probable cause</i>	<i>Possible remedy</i>
Main drive belts slipping.	Adjust main drive belts (par. 120).
Roll tension springs defective or broken.	Replace roll tension springs (par. 162).

36. Vibrator Screen Does Not Operate

<i>Probable cause</i>	<i>Possible remedy</i>
Vibrator screen electric motor drive belt worn or broken.	Replace vibrator screen electric motor drive belt (par. 119).
Drive sheave or vibrator screen electric motor defective.	Replace drive sheave (par. 122).
Vibrator screen magnetic switch or wiring defective.	Replace magnetic starter switch (par. 129). Repair wiring.
Vibrator screen electric motor defective.	Replace vibrator screen electric motor (par. 130).
Electric motor control switch heater defective.	Replace defective motor control switch heater (par. 129).

37. Vibrator Screen Gallops

<i>Probable cause</i>	<i>Possible remedy</i>
Rubber mounting shocks broken or defective.	Replace rubber mounting shocks (par. 170).
Balance wheel broken or defective.	Replace balance wheel (par. 165).

38. Conveyor Belt Wears Excessively

<i>Probable cause</i>	<i>Possible remedy</i>
Belts not troughing or tracking properly.	Adjust conveyor belts (pars. 150 and 151).
Conveyor belt scrapers defective.	Replace conveyor belt scrapers (par. 154).
Rocks wedged between side or back of troughing conveyor and belt.	Remove rocks.
Rock or gravel sticking to head belt scrapers and return idler rollers.	Clean out rock or gravel.
Roller on idler not turning.	Check idlers for tight rollers and adjust or loosen.
Sand imbedded in fabric of rear flashing on troughing conveyor.	Clean off sand.
Deflectors of troughing conveyor bent down.	Straighten out bent portion.

39. Feeder Conveyors Inoperative

<i>Probable cause</i>	<i>Possible remedy</i>
Feeder conveyor electric motor belts worn or broken.	Replace broken or worn belts (par. 119).

Drive sheave on conveyor motor or gear reducer defective. Replace defective sheave (par. 122).

Defective gear reducer.....Replace defective gear reducer (par. 146).

Electric motor starting switch defective or defective wiring. Replace electric motor starting switch (par. 126). Repair defective wiring.

Defective heater, electric motor control switch. Replace defective motor control switch heater (par. 129).

Defective electric motor.....Replace electric motor (par. 130).

40. Brakes Faulty

<i>Probable cause</i>	<i>Possible remedy</i>
Air lines broken or damaged.	Replace broken or damaged air lines (par. 136).
Air filter damaged.....	Replace broken or damaged air filter (par. 134).
Relay valve broken or damaged.	Replace broken or damaged relay valve (par. 133).
Air chamber broken or damaged.	Replace broken or damaged air chamber (par. 132).
Air tank broken or damaged.	Replace air tank (par. 135).
Brake control mechanical slack adjuster out of adjustment.	Adjust slack adjuster (par. 178).
Defective or broken slack adjuster.	Repair or replace damaged slack adjuster (par. 178).
Defective or worn brake lining.	Replace defective or worn brake lining (par. 179).
Defective or broken brake shoe.	Replace broken or defective brake shoe (par. 179).

41. Power Failure in Main Electrical Panel

<i>Probable cause</i>	<i>Possible remedy</i>
Burned or damaged heater strips.	Correct cause of heater strip failure and replace heater strips (par. 129).
Defective or damaged magnetic starter.	Replace magnetic starter (par. 129).
Defective or damaged wiring.	Repair or replace defective wiring as required.
Master switch to individual circuit breakers turned OFF.	Reset switch and circuit breakers as required.

42. Tail and Marker Light Inoperative

<i>Probable cause</i>	<i>Possible remedy</i>
Burned out lamp.....	Replace lamp (par. 107).
Wiring defective.....	Repair or replace wiring (par. 107).
Electrical (trailer) coupling or receptacle defective.	Repair or replace electrical receptacle or coupling (par. 106).

Section V. FIELD EXPEDIENT REPAIRS

43. Field Expedient Repairs

Organizational maintenance troubles may occur while the roll crusher is operating in the field where supplies and repair parts are not available and normal corrective action cannot be performed. When this condition exists, the following expedient repairs may be used in emergencies, upon the decision of the unit commander. Equipment so repaired must be removed from operation as soon as possible and properly repaired before being placed in operation again.

44. Engine Stops

<i>Trouble</i>	<i>Expedient remedy</i>
Clogged fuel filters.....	Remove clogged fuel filter element.
Engine overheats.....	Remove thermostats.

45. Controls at Operators Stations Defective

<i>Trouble</i>	<i>Expedient remedy</i>
Defective start and stop electrical motor push-button control.	Disconnect wires from rear of pushbutton and connect wires direct, bypassing the button. Until a new pushbutton can be obtained operate roll crusher from main control panel. See wiring diagram, figure 1.

Section VI. RADIO INTERFERENCE SUPPRESSION

46. General Methods Used To Attain Proper Suppression

Essentially, suppression is attained by providing a low resistance path to ground for the stray currents. The methods used include shielding the ignition and high-frequency wires, grounding the frame with bonding straps, and using capacitors and resistors. For general information on radio interference suppression, see TM 11-483.

47. Interference Suppression Components

a. Primary Suppression Component. The engine-to-frame bonding strap is illustrated on figure 7.

b. Secondary Suppression Components.

- (1) *Tooth-type lockwashers.* Tooth-type lockwashers are used to assure a good metal-to-metal contact where electrical components are mounted.
- (2) *Shielded cable.* The generator is equipped with a shielded cable connecting the generator and generator regulator.

48. Replacement of Suppression Components

a. Primary Suppression Component. Replace the bonding strap (3 fig. 7) by removing the bolt (5) washer (6) and nut (2) that secures

it to the timing gear cover (1) and the engine frame (4). Install a new bonding strap and mounting hardware. Be certain of a good metal-to-metal contact.

b. Secondary Suppression Components.

(1) *Tooth-type lockwashers.*

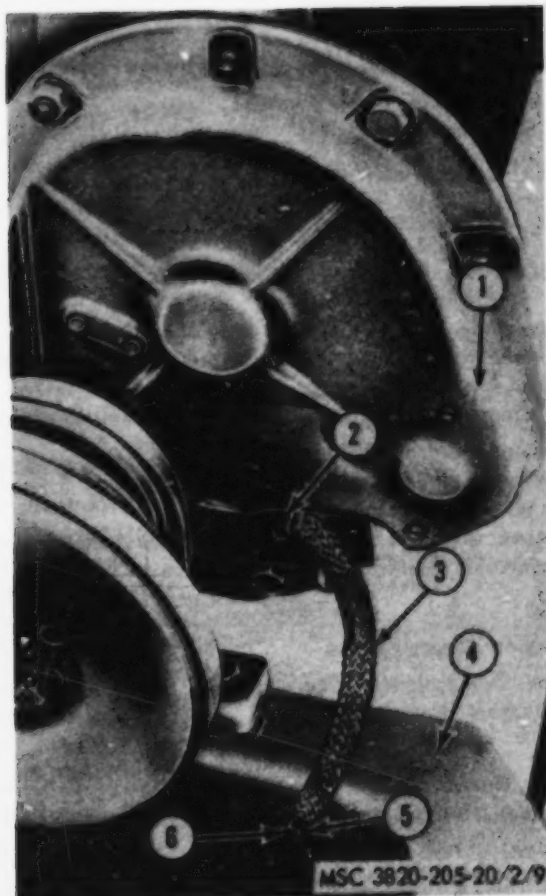
(a) If proper suppression is to be obtained, it is necessary that a good metal-to-metal contact is obtained by tightening the mounting hardware employing tooth-type lockwashers.

(b) For replacement of tooth-type lockwashers, refer to paragraphs 79, 80, and 82.

(2) *Shielded cable.* Replace the shielded generator-to-generator regulator cable (par. 79).

49. Testing of Radio Interference Suppression Components

Test the capacitors for leaks and shorts on a capacitor tester; replace defective capacitors. If test equipment is not available and interference is indicated, isolate the cause of interference by the trial-and-error method of replacing each capacitor in turn until the cause of interference is located and eliminated.



- 1 Timing gear cover
- 2 Nut, 5/16-18
- 3 Bonding strap
- 4 Engine frame
- 5 Bolt, machine, 5/16-18 x 7/8 in.
- 6 Washer, ET, 5/16 in.

Figure 7. Radio interference suppression components.

CHAPTER 4

ENGINE MAINTENANCE INSTRUCTIONS

Section I. MANUAL AND MECHANICAL CONTROLS AND INSTRUMENTS

50. General

The location and purpose of the controls and instruments are given in TM 5-3820-205-10/1.

51. Engine Clutch Levers

a. Removal. Remove the two engine clutch levers from the clutch as instructed on figure 8.

b. Cleaning and Inspection. Clean and inspect all parts. Replace damaged parts.

c. Installation. Install the two engine clutch levers on the clutch in reverse of the instructions on figure 8.

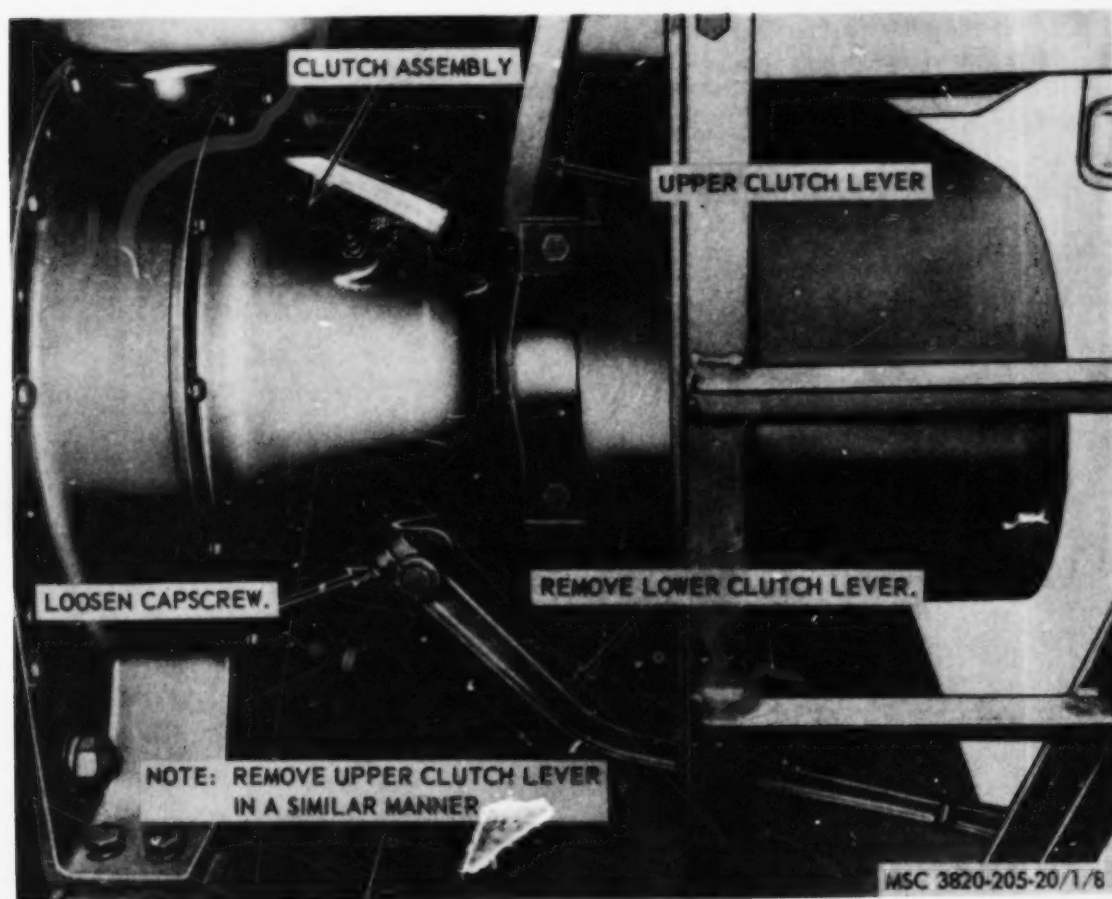


Figure 8. Engine clutch levers, removal and installation.

52. Throttle Control Lever

a. Removal.

- (1) Disconnect the throttle control cable from the fuel injector pump as instructed on figure 9.
- (2) Remove the throttle control lever from the instrument panel as instructed on figure 10.

b. *Cleaning and Inspection.* Clean and inspect all parts. Replace damaged parts.

c. Installation.

- (1) Install the throttle control lever on the instrument panel in reverse of the instructions on figure 10.
- (2) Connect the throttle control cable to the fuel injector pump in reverse of the instructions on figure 9.

53. Tachometer-Hourmeter and Drive

a. *Removal.* Remove the tachometer-hourmeter and drive adapter from the instrument panel and engine block as instructed on figures 9 and 10.

b. *Disassembly.* Disassemble the tachometer drive adapter as illustrated on figure 11.

c. Cleaning, Inspection, and Repair.

- (1) Clean all parts in an approved cleaning solvent and dry thoroughly.
- (2) Inspect the tachometer-hourmeter for broken glass, and defective drive cable. Replace a defective tachometer-hourmeter and drive cable.
- (3) Inspect the tachometer drive for worn, damaged, or defective parts. Replace or repair worn, damaged, or defective parts as necessary.

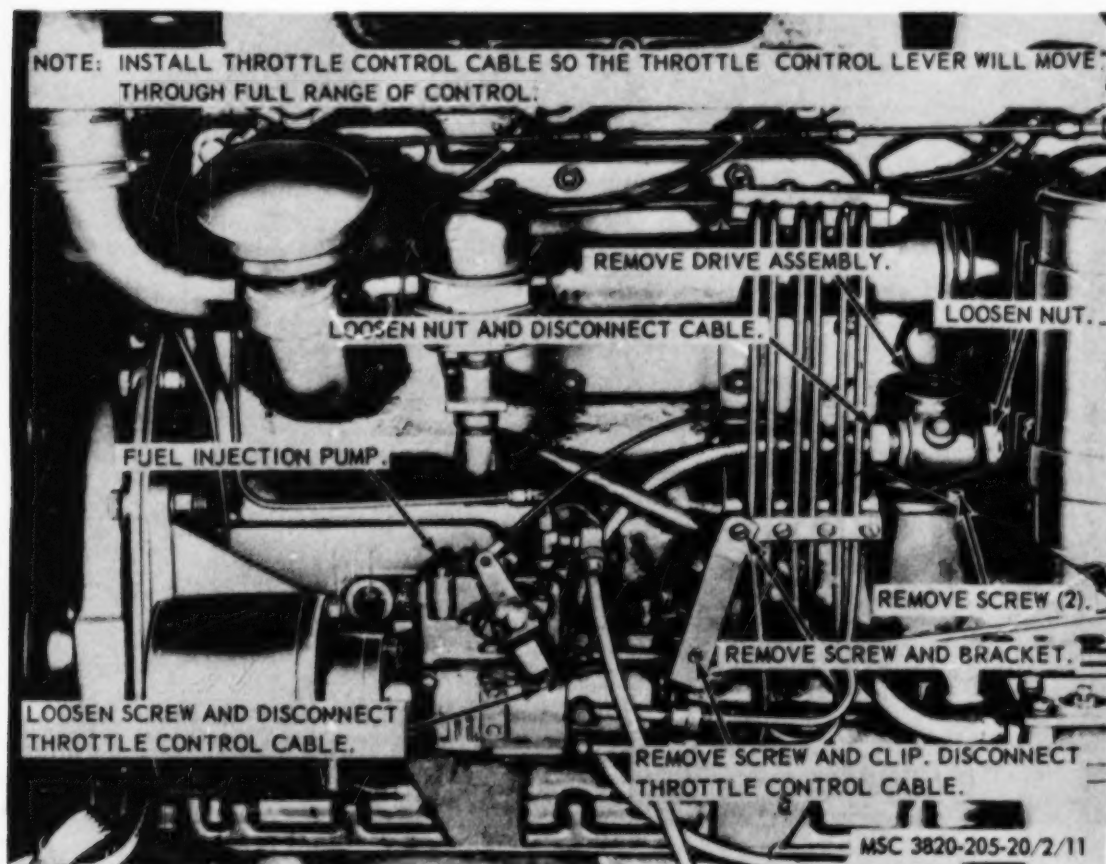


Figure 9. Tachometer drive adapter and throttle cables, removal and installation.

d. *Reassembly.* Reassemble the tachometer drive illustrated on figure 11.

e. *Installation.* Install the tachometer-hourmeter and drive adapter on the instrument panel and engine block in reverse order of the instructions on figures 9 and 10.

54. Fuel Gage

a. *Removal.* Remove the fuel gage from the fuel tank as instructed on figure 12.

b. *Cleaning and Inspection.* Clean and inspect all parts. Inspect the gage for broken glass. Replace damaged parts.

c. *Installation.* Install the fuel gage on the fuel tank in reverse of the instructions on figure 12.

55. Fuel Primer

a. *Removal.* Remove the fuel primer from the engine as instructed on figure 13.

b. *Cleaning and Inspection.* Clean and inspect all parts. Replace damaged parts.

c. *Installation.*

(1) Install the fuel primer on the engine in reverse of the instructions on figure 13.

(2) Bleed the fuel system (TM 5-3820-205-10 1).

56. Air Cleaner Indicator

a. *Removal.* Remove the air cleaner indicator from the air cleaner as instructed on figure 14.

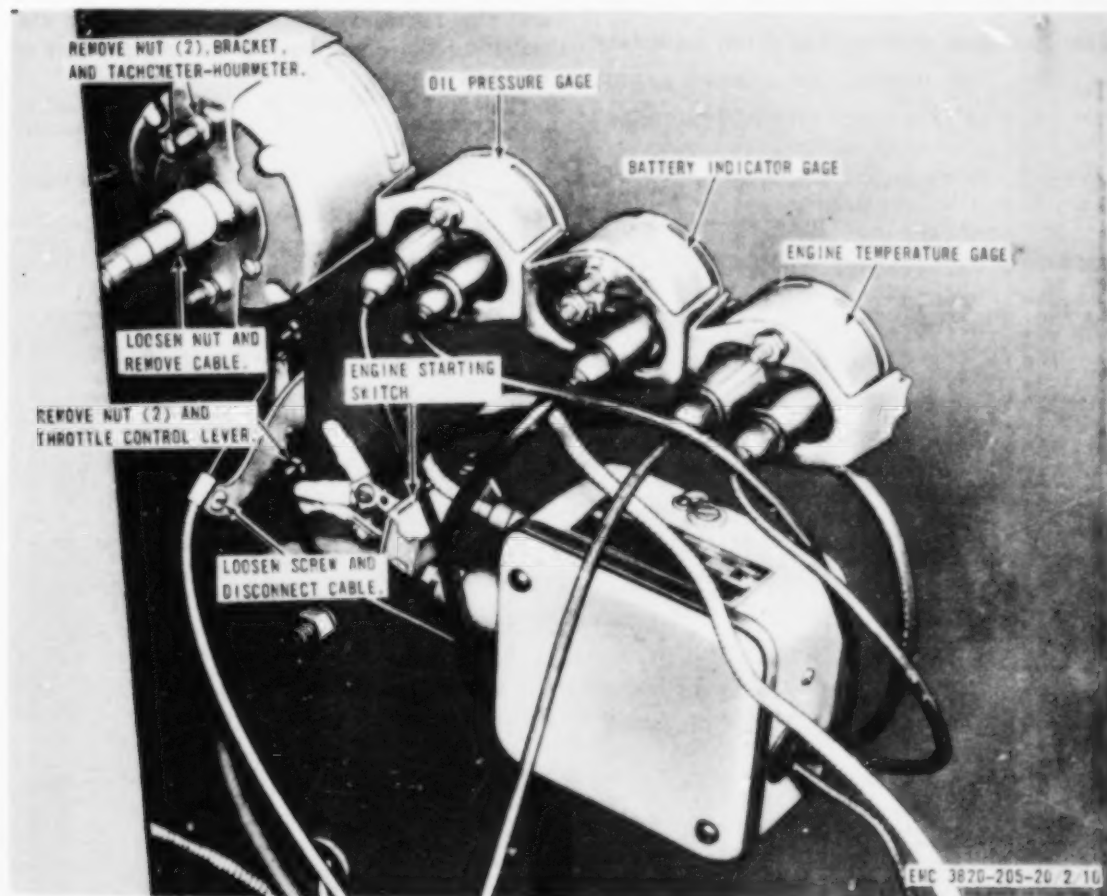


Figure 10. Instrument panel, rear view.

b. *Cleaning and Inspection.* Clean and inspect all parts. Inspect the air cleaner indicator for proper operation. Replace damaged parts.

c. *Installation.* Install the air cleaner indicator on the air cleaner in reverse of the instructions on figure 14.

57. Handcranking Assembly

a. *Removal.* Remove the handcranking assembly from the engine as instructed on figure 15.

b. *Disassembly.* Disassemble the handcranking assembly as illustrated on figure 16.

c. *Cleaning, Inspection, and Repair.* Clean and inspect. Replace or repair worn, damaged, or defective parts as necessary.

d. *Reassembly.* Reassemble the handcranking assembly as illustrated on figure 16.

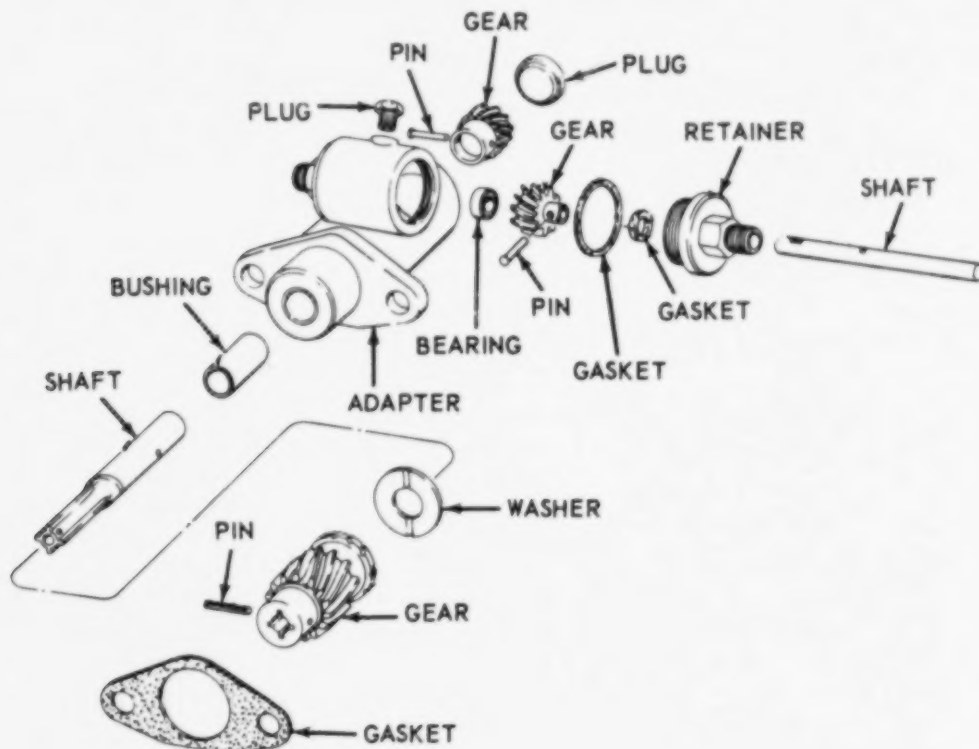
e. *Installation.* Install the handcranking assembly on the engine in reverse of the instructions on figure 15.

Section II. FUEL SYSTEM

58. General

The diesel fuel system consists of a 100-gallon fuel tank, primary fuel filter, secondary fuel filter, fuel primer, fuel injector pump,

engine speed governor, fuel injectors, air cleaner, intake manifolds, ether starting aids, and the necessary lines and fittings for distributing the diesel fuel to the components of the fuel system.



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Figure 11. Tachometer drive, exploded view.

59. Air Cleaner

a. *Removal.* Remove the air cleaner and pipe from the engine as instructed on figure 17.

b. *Disassembly.*

- (1) Remove the air cleaner indicator (par. 56).
- (2) Disassemble the air cleaner as illustrated on figure 18.

c. *Cleaning, Inspection, and Repair.* Clean and inspect all parts. Replace gaskets. Repair or replace damaged parts as necessary.

d. *Reassembly.*

- (1) Reassemble the air cleaner illustrated on figure 18.
- (2) Install the air cleaner indicator (par. 56).

e. *Installation.* Install the air cleaner and pipe on the engine in reverse of the instructions on figure 17.

60. Intake Manifolds

a. *Removal.*

- (1) Remove the air cleaner pipe (par. 59).

- (2) Remove the two intake manifolds from the engine as instructed on figure 19.

b. *Cleaning and Inspection.* Clean and inspect all parts. Replace a damaged part as necessary.

c. *Installation.*

- (1) Install the two intake manifolds on the engine in reverse of the instructions on figure 19.

Note. Correct torque for tightening the manifold nuts is 50-55 foot-pounds.

- (2) Install the air cleaner pipe (par. 59).

61. Fuel Injectors

a. *General.* A characteristic of the Roosa-Master fuel injection pump is, that if engine misfiring is traced to a cylinder in which no combustion is taking place, the cause may be an injector nozzle valve sticking open in the cylinder which immediately precedes that cylinder in the engine firing order. During injection to the cylinder which has the nozzle valve sticking open, fuel rushes into that cylinder with no restriction, causing a scavenging

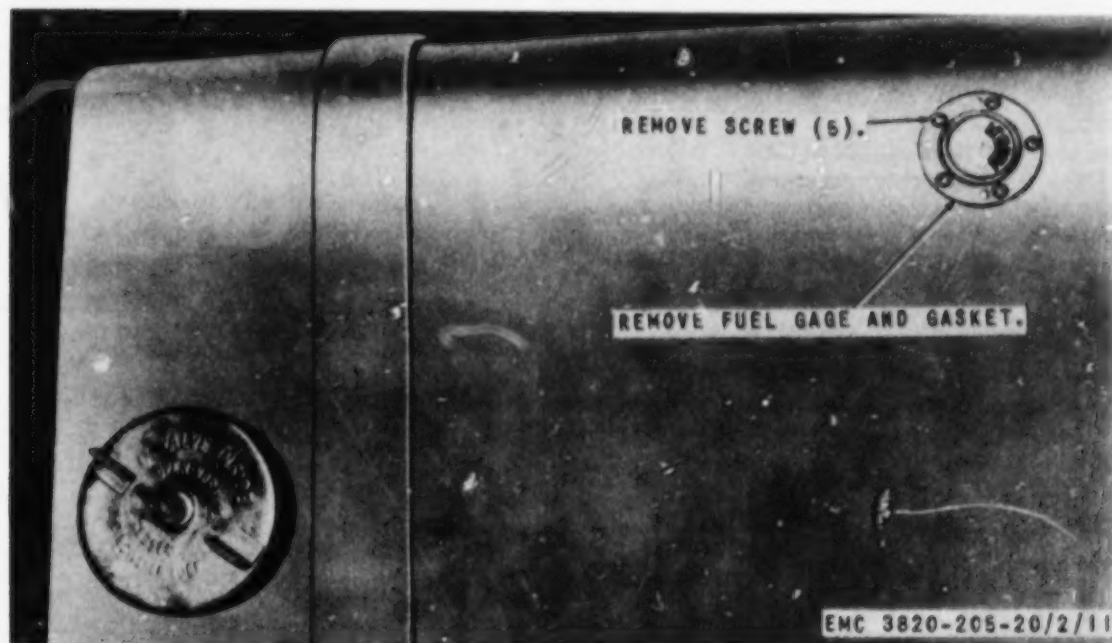


Figure 12. Fuel gage, removal and installation.

effect in the pump distributor rotor. This causes a partial loss in fuel pressure to the following injector, the nozzle fails to open, and combustion does not occur in that cylinder.

b. On-Equipment Testing.

- (1) Start and operate engine at idle speed (TM 5-3820-205-10/1).
- (2) Momentarily loosen injector fuel line assembly (fig. 5), on each injector in turn, note fuel injector where loosening of fuel line assembly causes no effect on engine operation.

Warning: Keep hands away from escaping fuel spray when loosening injector fuel line assemblies.

- (3) Stop the engine and replace the injector noted in (2) above.

- (4) Start the engine as in (1) above. If the operation is still erratic, determine the firing order (par. 4b) and replace injector that injects immediately prior to fuel injector found in (2) above.

c. Removal. Remove the six fuel injectors from the engine as instructed on figure 19.

d. Cleaning and Inspection. Clean and inspect all parts. Replace the gaskets and damaged parts.

e. Installation. Install the fuel injectors on the engine in reverse of the instructions on figure 19.

f. Testing.

- (1) Remove one fuel injector from the engine, leaving the fuel lines connected to the fuel injection pump.

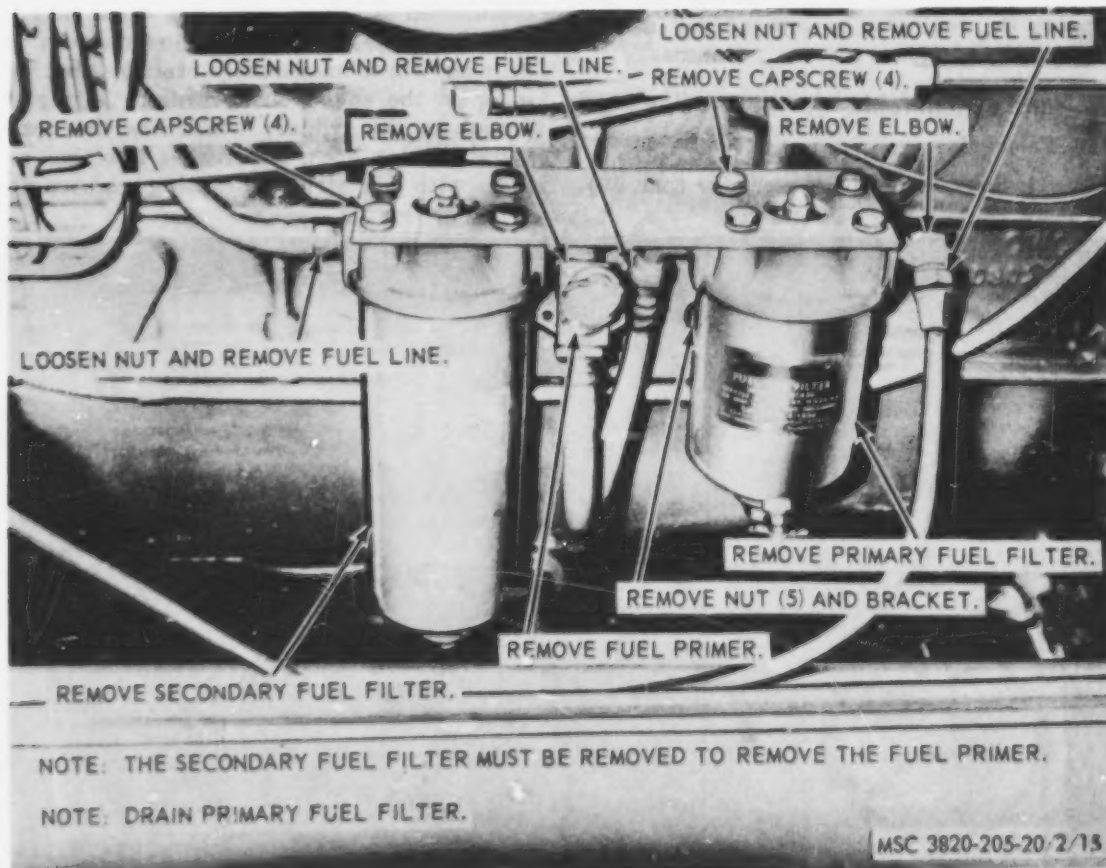


Figure 19. Fuel primer and fuel filters, removal and installation.

- (2) Start the engine (TM 5-3820-205-10/1).
- (3) Hold a target 12 inches from the nozzle end, and observe the spray pattern for deflected spray or a spray pattern that is not symmetrical.
- (4) Inspect the nozzle for dripping or leaking around the capnut.
- (5) Test the remaining fuel injectors in a similar manner.
- (6) Stop the engine (TM 5-3820-205-10/1) and replace a defective injector.

Warning: Keep hands away from nozzle spray. The high velocity may puncture the skin and cause blood poisoning.

62. Ether Starting Aids

a. Removal.

- (1) Remove the ether starting aids and bracket from the instrument panel as instructed on figure 20.
- (2) Remove the ether starting aid lines from the intake manifolds (par. 60).

b. *Cleaning and Inspection.* Clean and inspect all parts. Replace damaged parts.

c. Installation.

- (1) Install the ether starting aid lines on the intake manifolds (par. 60).
- (2) Install the ether starting aids and bracket on the instrument panel in reverse of the instructions on figure 20.

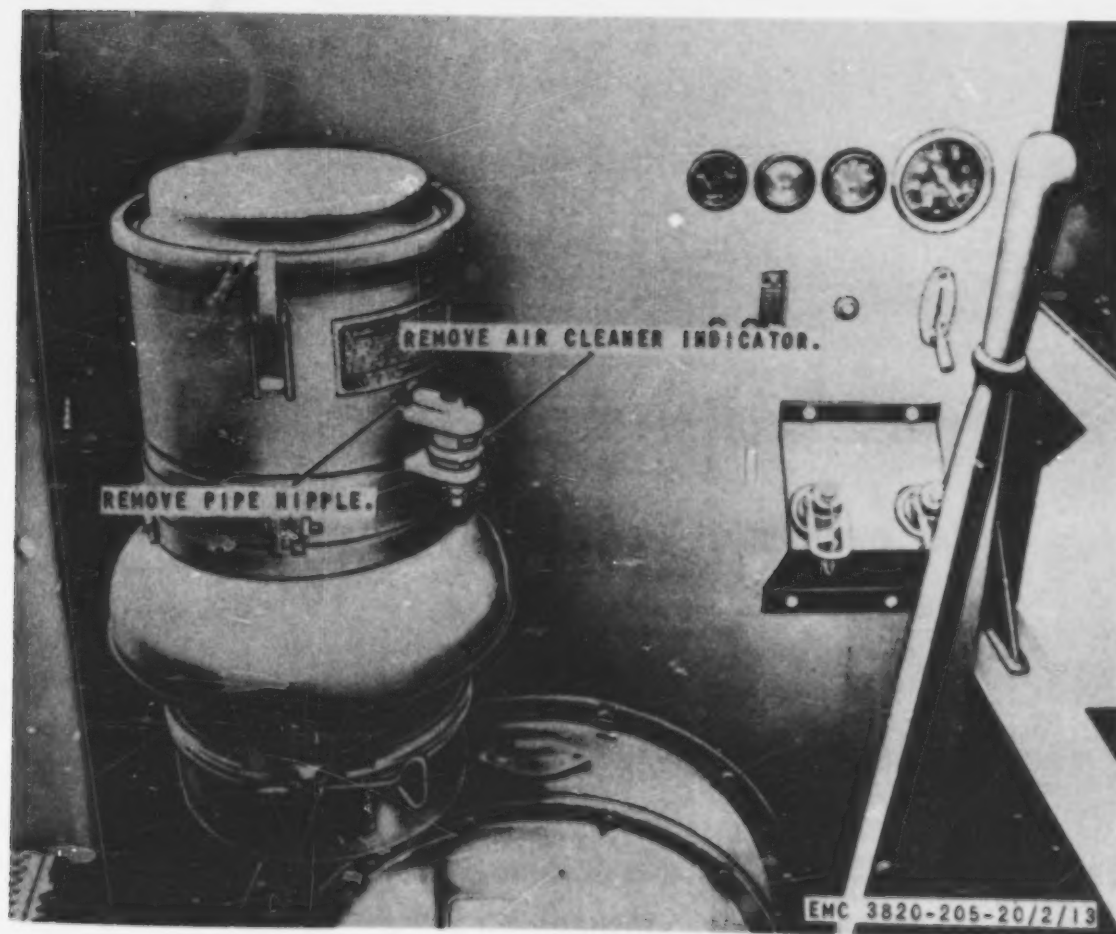


Figure 14. Air cleaner indicator, removal and installation.

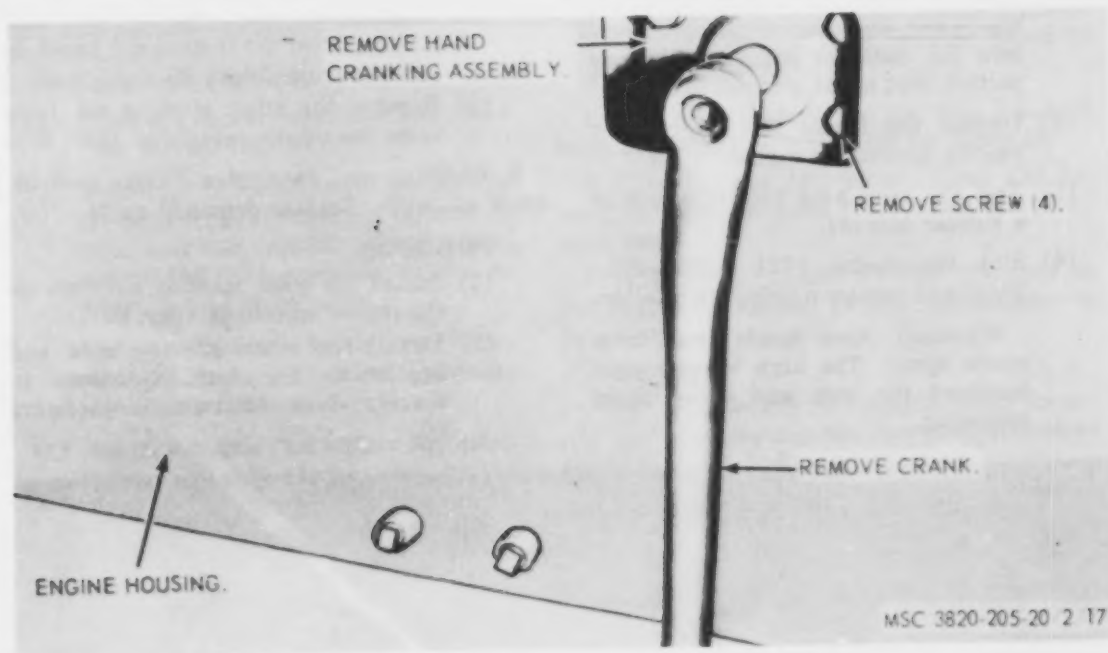


Figure 15. Handcranking assembly, removal and installation.

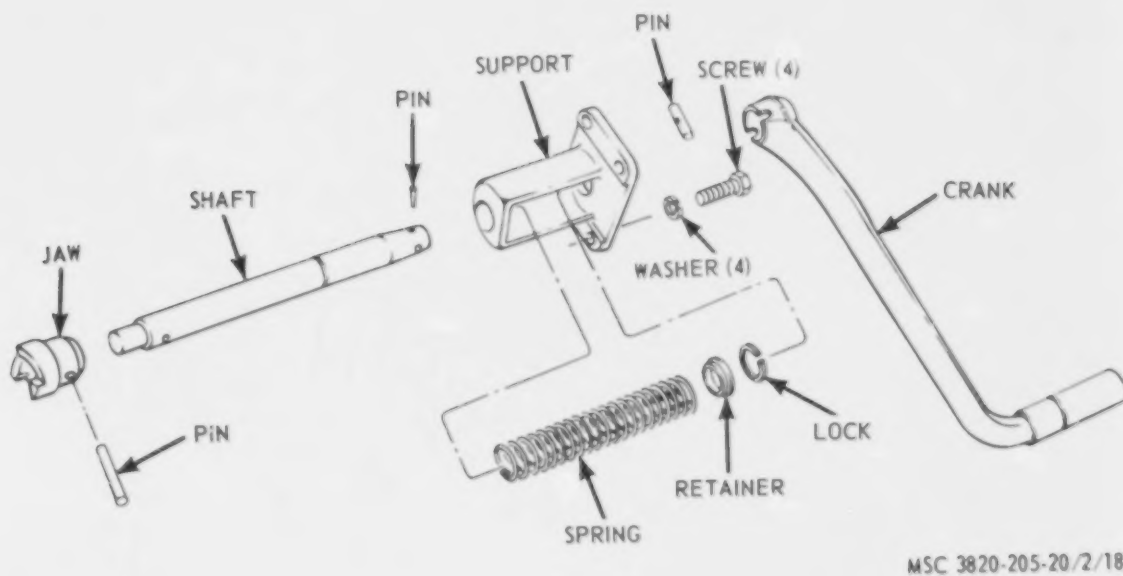
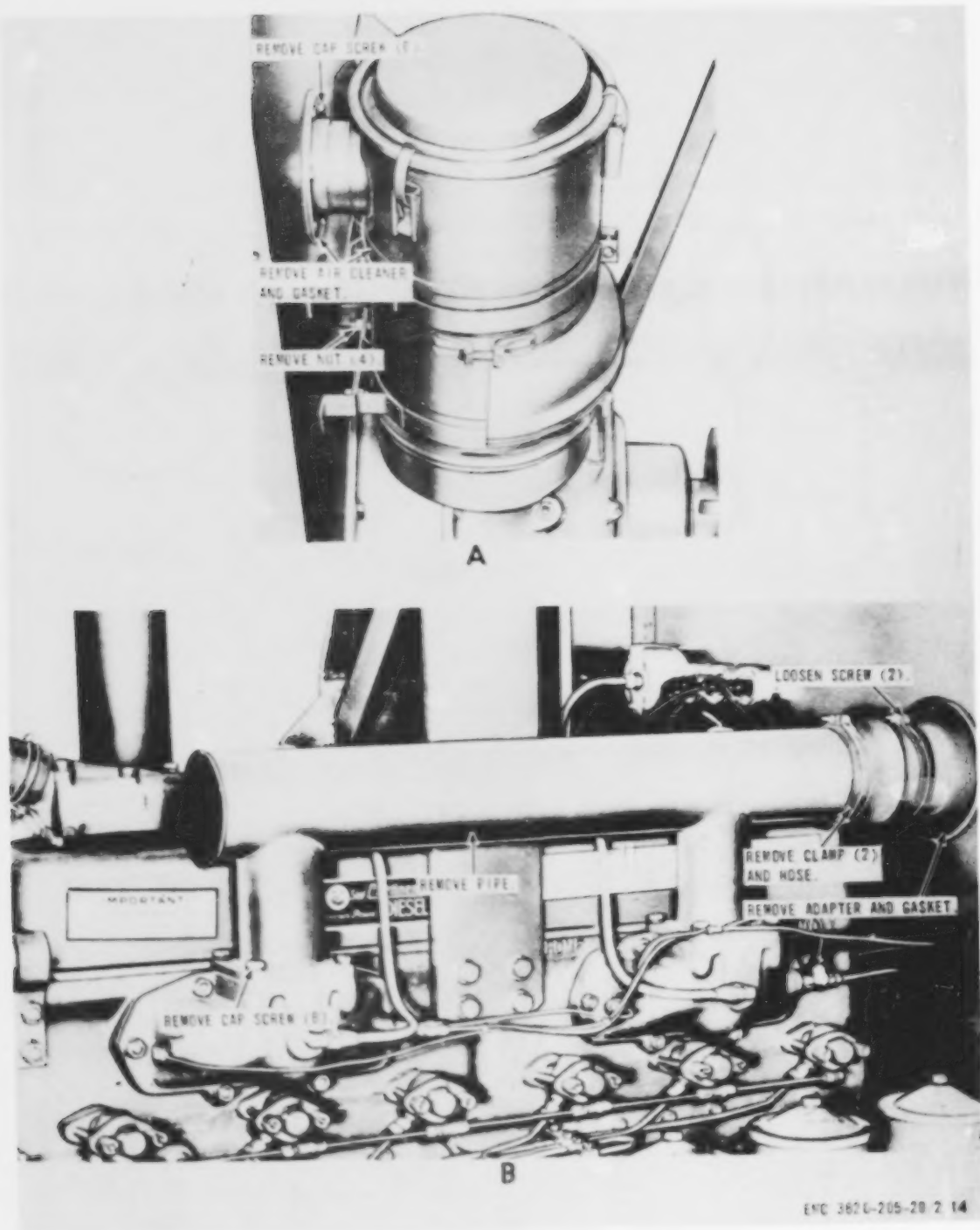
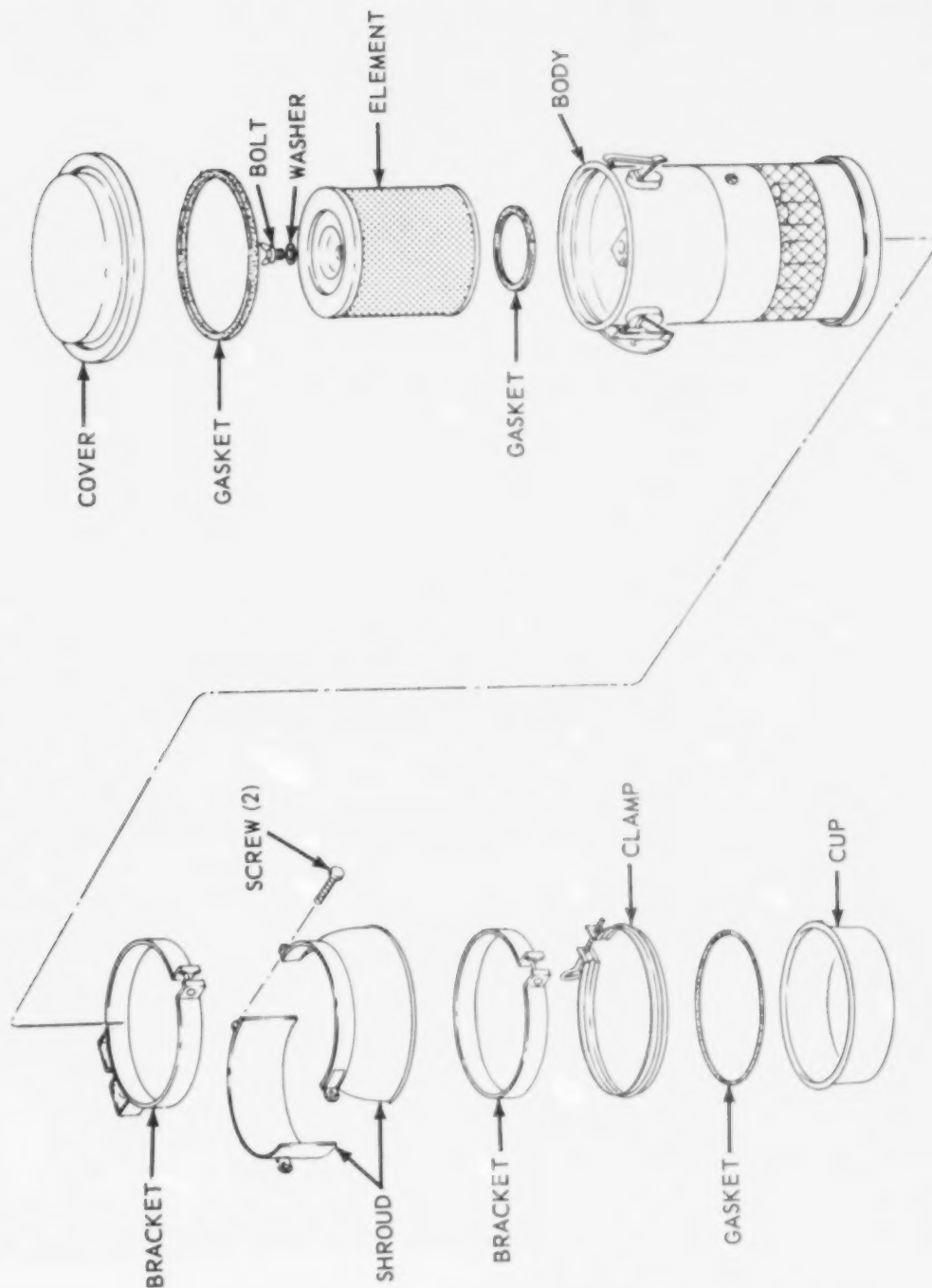


Figure 16. Handcranking assembly, exploded view.



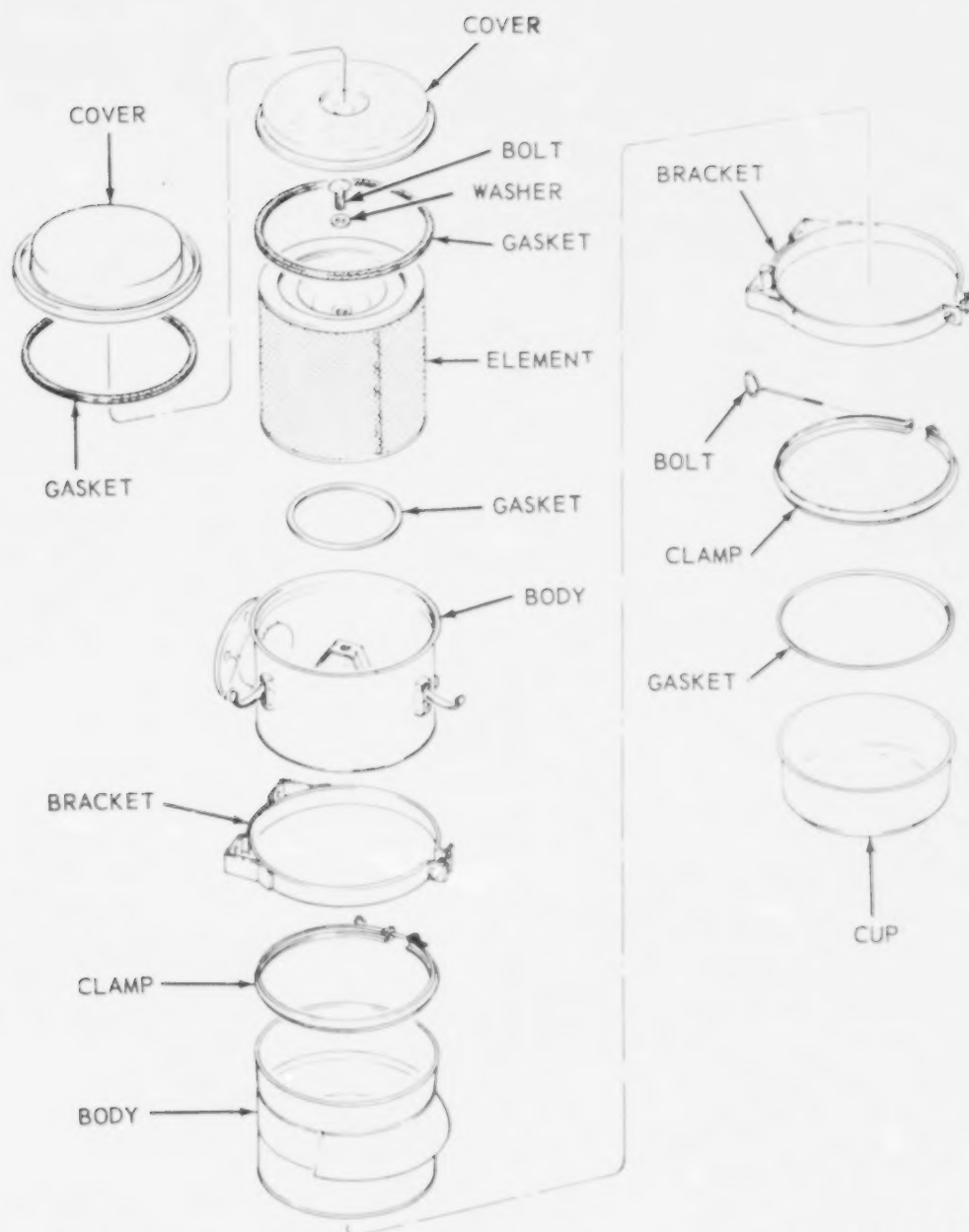
A—Air cleaner installed
B—Air cleaner pipe installed

Figure 17. Air cleaner and pipe, removal and installation.



MSC 3820-205-20/1/18 ①

(Serial numbers 6650 through 6887)
Figure 18. Air cleaner, exploded view.



MSC 3820-205-20/2/20①

(Serial numbers 6590 through 6629)

Figure 18—Continued.

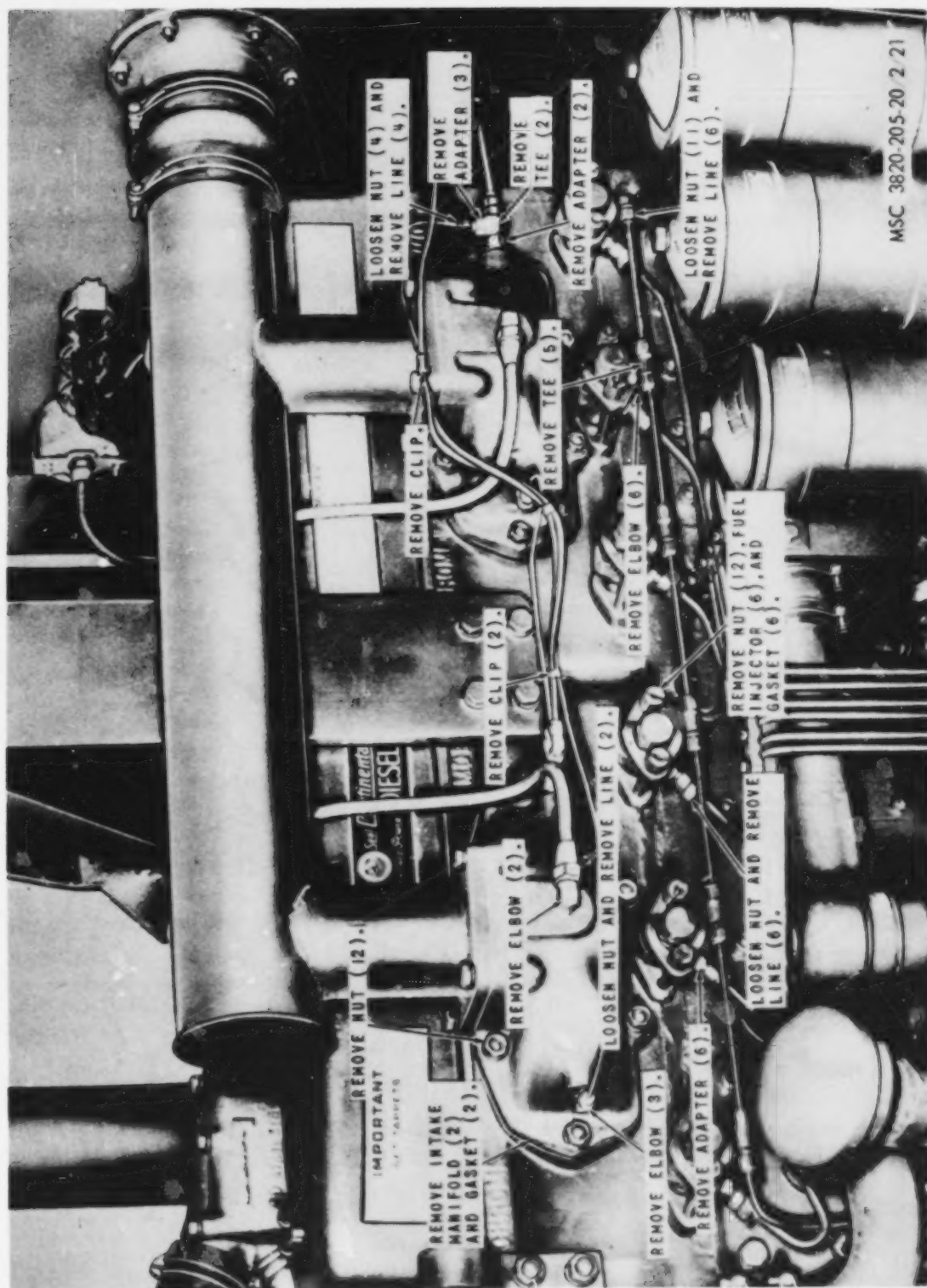


Figure 19. Intake manifolds and fuel injectors, removal and installation.

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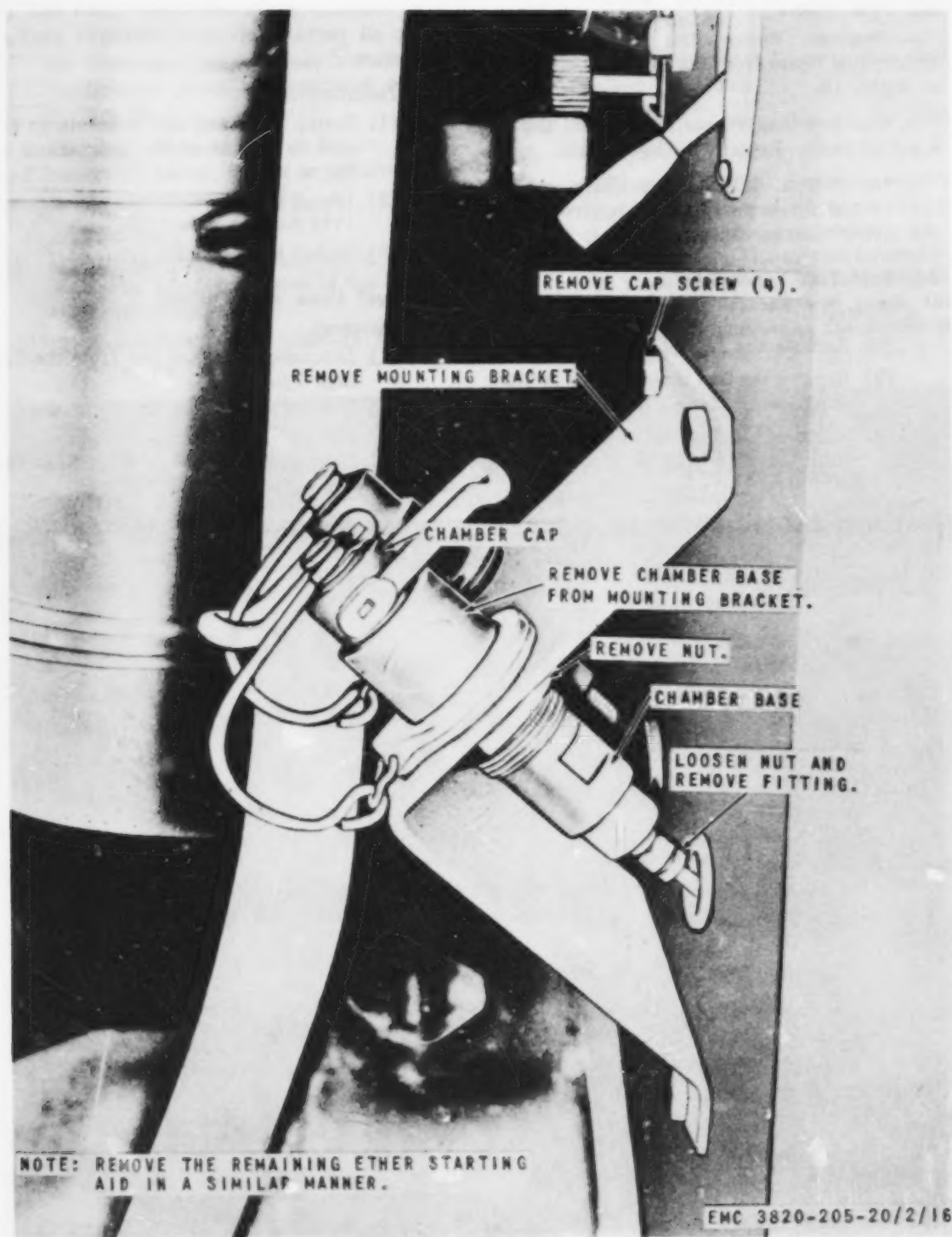


Figure 20. Ether starting aids and bracket, removal and installation.

63. Fuel Filters

a. *Removal.* Remove the primary and secondary fuel filters from the engine as instructed on figure 13.

b. *Cleaning and Inspection.* Clean and inspect all parts. Replace damaged parts.

c. *Installation.* Install the primary and secondary fuel filters on the engine in reverse of the instructions on figure 13.

64. Fuel Tank and Cap

a. *Removal.*

- (1) Remove the fuel gage (par. 54).
- (2) Remove the fuel tank cap and strainer (TM 5-3820-205-10/1).
- (3) Remove the fuel tank and brackets from the unit as instructed on figure 21.

b. *Cleaning and Inspection.* Clean and inspect all parts. Replace a damaged part as necessary.

c. *Installation.*

- (1) Install fuel tank and brackets on the unit in reverse of the instructions on figure 21.
- (2) Install the fuel tank cap and strainer (TM 5-3820-205-10/1).
- (3) Install the fuel gage (par. 53).

65. Fuel Lines and Fittings

a. *Removal.*

- (1) Disconnect the fuel line from the fuel tank (par. 64).
- (2) Disconnect the fuel lines from the fuel primer (par. 55).
- (3) Disconnect the fuel lines from the fuel filters (par. 63).

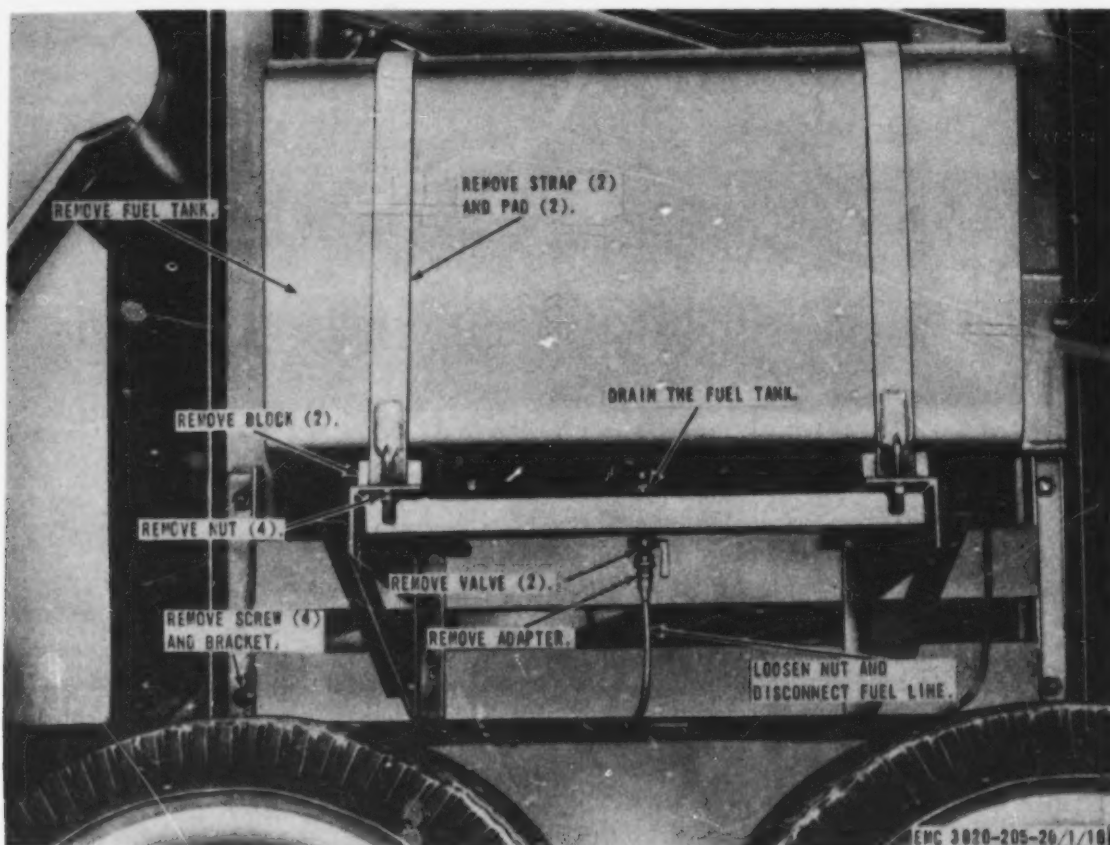


Figure 21. Fuel tank and brackets, removal and installation.

(4) Disconnect the fuel lines from the fuel injectors (par. 61).

(5) Disconnect the fuel lines from the fuel injector pump as instructed on figure 22.

b. Cleaning, Inspection, and Repair. Clean and inspect all parts. Repair or replace damaged parts as necessary.

c. Installation.

(1) Connect the fuel lines to the fuel injector pump in reverse of the instructions on figure 22.

(2) Connect the fuel lines to the fuel injectors (par. 61).

(3) Connect the fuel lines to the fuel filters (par. 63).

(4) Connect the fuel lines to the fuel primer (par. 55).

(5) Connect the fuel lines to the fuel tank (par. 64).

Caution: If fuel connector screws (fig. 5) are loosened when connecting the line assemblies, new washers must be installed and the screws torqued to the proper tension of 420 inch-pounds. Overtorquing screws will crush the copper gaskets allowing the screws to bottom.

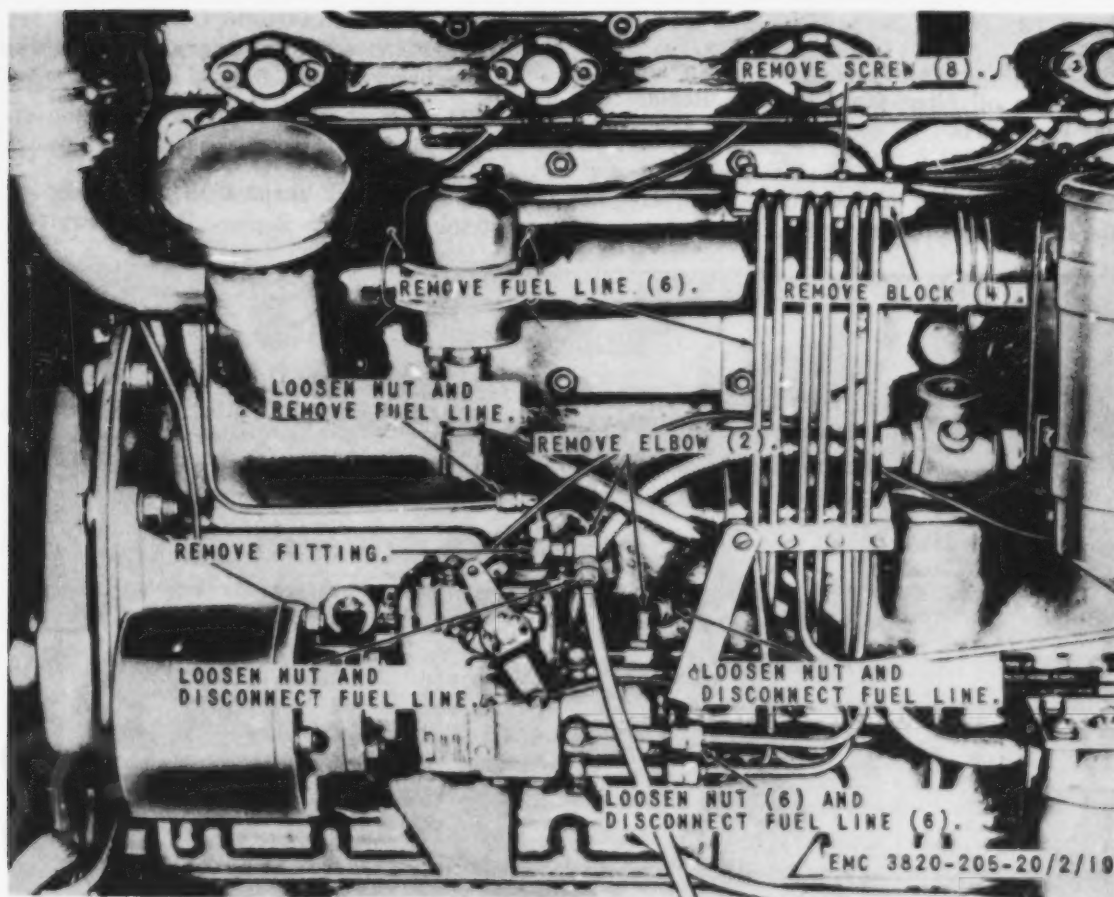


Figure 22. Fuel injector pump fuel lines, removal and installation.

Section III. ENGINE LUBRICATION SYSTEM

66. General

The engine lubrication system is a pressurized-type. A gear-type oil pump attached to the bottom of the engine crankcase provides oil under pressure from the engine oil pan to the moving parts of the engine. The oil cooler bypass valve allows the engine oil to continue to flow through the lubrication system should the oil cooler become clogged. The engine oil is filtered by three oil filters.

67. Oil Filters and Mounting Bracket

a. Removal. Remove the oil filter and mounting bracket from the engine as instructed on figure 23.

b. Cleaning and Inspection. Clean and inspect the oil filters and bracket. Replace all damaged parts.

c. Installation. Install the oil filters and mounting bracket on the engine in reverse of the instructions on figure 23.

68. Oil Cooler Bypass Valve

a. Removal and Disassembly. Remove and disassemble the oil cooler bypass valve as illustrated on figure 24.

b. Cleaning and Inspection. Clean and inspect all parts. Replace all damaged parts as necessary.

c. Reassembly and Installation. Reassemble and install the oil cooler bypass valve illustrated on figure 24.

69. Oil Cooler

a. Removal.

(1) Remove the oil filters and mounting bracket (par. 67).

(2) Remove the oil cooler from the engine as instructed on figure 25.

b. Cleaning and Inspection. Clean and inspect the oil cooler. Replace if necessary.

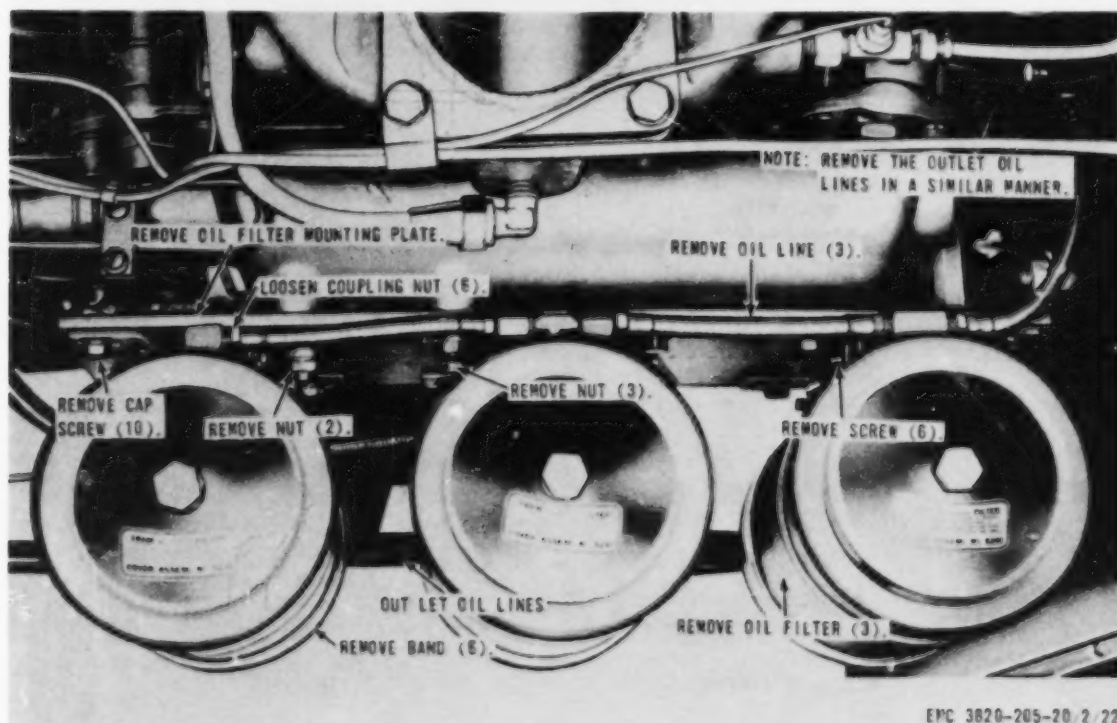


Figure 23. Oil filters and mounting bracket, removal and installation.

c. Installation.

- (1) Install the oil cooler on the engine in reverse of the instructions on figure 25.
- (2) Install the mounting bracket and oil filters (par. 67).

70. Crankcase Breather

a. Removal. Remove the crankcase breather from the engine as instructed on figure 25.

b. Cleaning and Inspection. Clean and inspect the crankcase breather. Replace any damaged part.

c. Installation. Install the crankcase breather on the engine in reverse of the instructions on figure 25.

71. Oil Lines and Fittings

a. Removal. Remove oil lines and fittings (pars. 67 and 69).

b. Cleaning and Inspection. Clean and inspect all oil lines and fittings. Replace as necessary.

c. Installation. Install oil lines and fittings (pars. 67 and 69).

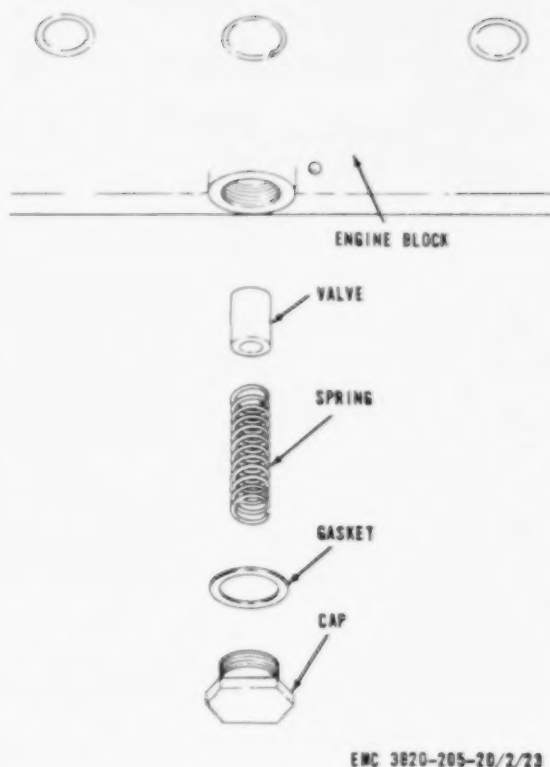


Figure 24. Oil cooler bypass valve, removal and installation.

Section IV. ENGINE EXHAUST SYSTEM

72. General

The engine exhaust system consists of two air-cooled manifolds mounted along the left side of the cylinder head below the water manifold. The exhaust pipes extend through the hood of the engine which provides for mounting of a one-piece muffler. Water is prevented from entering the exhaust system and cylinder head by a weighted cap secured to the top of the muffler.

73. Muffler Assembly

a. Removal. Remove the muffler from the hood (TM 5-3820-205-10/1).

b. Cleaning and Inspection. Clean and inspect the muffler. Replace as necessary.

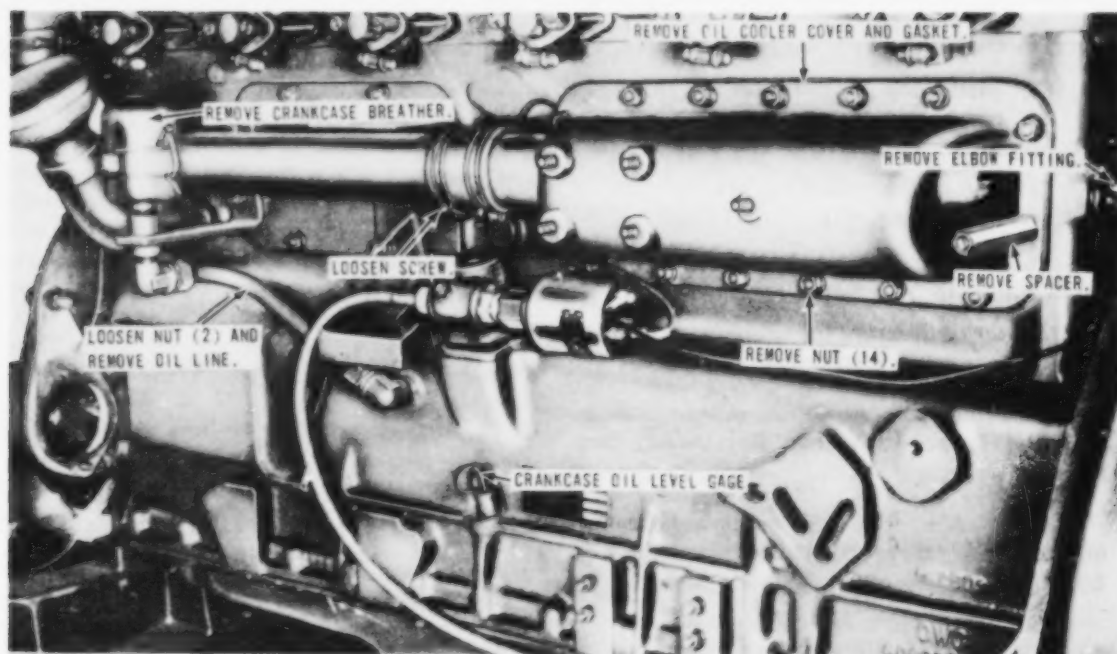
c. Installation. Install the muffler (TM 5-3820-205-10/1).

74. Exhaust Pipe and Manifold

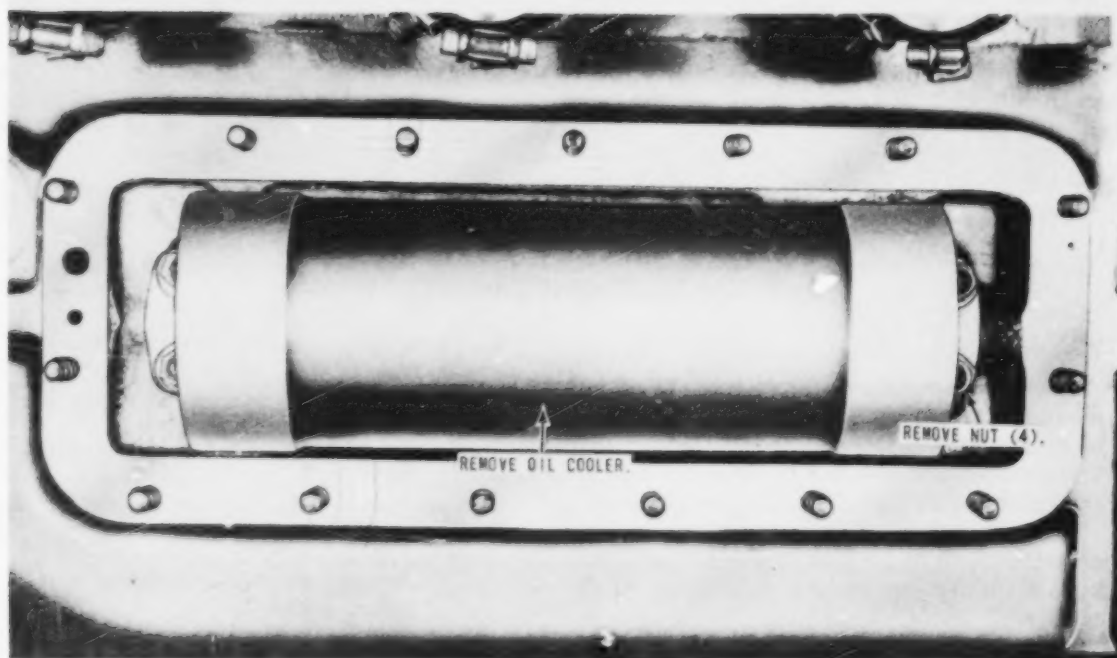
a. Removal.

- (1) Remove the muffler assembly (par. 73).
- (2) Remove the engine housing door supports (par. 93).
- (3) Remove the exhaust pipe and manifolds from the engine as instructed on figure 26.

b. Cleaning and Inspection. Clean and inspect the exhaust pipes and manifolds for damage. Replace as necessary.



A



B

EMC 3820-205-20/2/24

A—Oil cooler cover, installed
B—Oil cooler, installed

Figure 25. Oil cooler, removal and installation.

c. Installation.

- (1) Install the exhaust pipe and manifolds on the engine in reverse of the instructions on figure 26.

- (2) Install the engine housing door supports (par. 93).

- (3) Install the muffler assembly (par. 73).

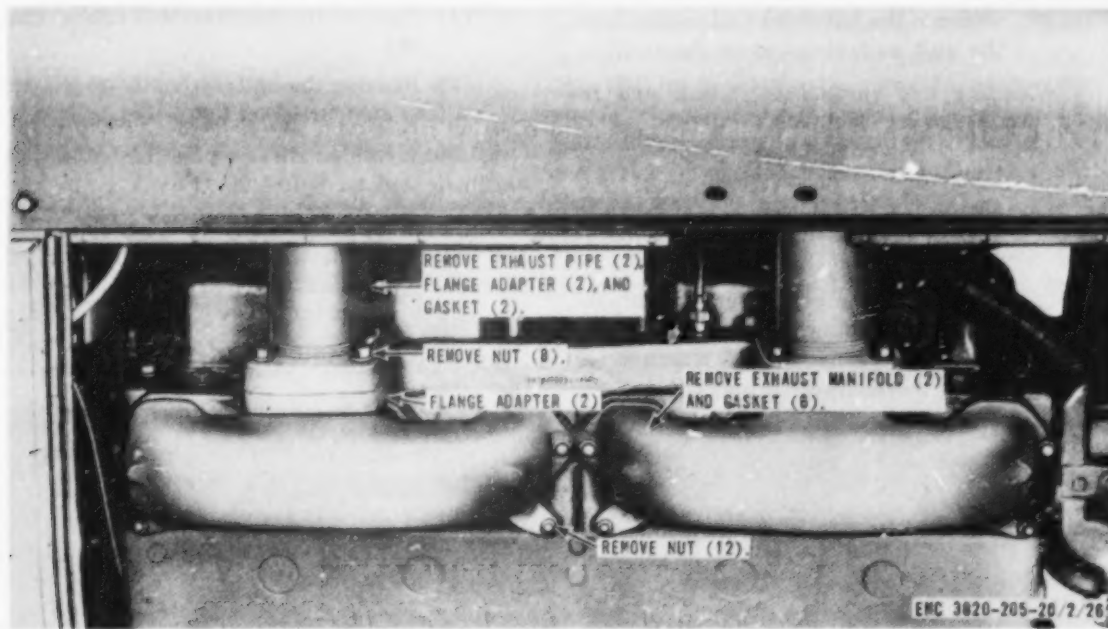


Figure 26. Exhaust pipe and manifolds, removal and installation.

Section V. ENGINE ELECTRICAL SYSTEM

75. General

The electrical system of the roll crusher is a 24-volt system which consists of four batteries, generator, generator regulator, starter, oil pressure gage and sending unit, water temperature gage and sending unit, battery indicator gage, safety governor, safety ignition switch, and the necessary wiring and connectors to complete the system. Figure 1 is the wiring diagram for the roll crusher electrical system.

76. Batteries and Cables

a. Testing.

- (1) Use a hydrometer to test each battery cell; each cell should read 1.280 specific gravity at 80° F. Recharge if the reading is 1.250 or less.

- (2) Use a voltmeter to test each cell for voltage. Each full charged cell must deliver two volts. A low voltage indicates a low charge or a defective cell. Recharge the battery if the output voltage varies more than 30 percent between cells, replace the battery.

Warning: Do not smoke or allow an open flame near charging batteries. Serious injury from explosion and acid could result. Avoid spilling electrolyte on clothing or flesh. Acid causes severe burns.

b. Removal.

- (1) Loosen locknut (fig. 27) and place clamp handle up or at right angle to battery terminal.

- (2) Remove clamps from battery terminals; inspect clamps for loose or corroded condition. Remove corrosion and coat battery terminals and clamps with grease.

- (3) Remove the batteries and cables from the unit as instructed on figure 27.

c. Cleaning and Inspection. Clean and inspect the batteries. Replace as necessary.

d. Installation.

- (1) Install the batteries and cables on the unit in reverse of the instructions on figure 27.
- (2) Install clamps on battery terminals. Tighten bushing nut to friction-fit between lug and battery terminal.

- (3) Tighten locknut and push handle down parallel with clamp.

77. Battery Box

a. Removal.

- (1) Remove the batteries and cables (par. 76).
- (2) Remove the battery box from the unit as instructed on figure 28.

b. Disassembly. Disassemble the battery box as illustrated on figure 29.

c. Cleaning, Inspection, and Repair. Clean and inspect the battery cables and box. Repair or replace any damaged parts.

d. Reassembly. Reassemble the battery box illustrated on figure 29.

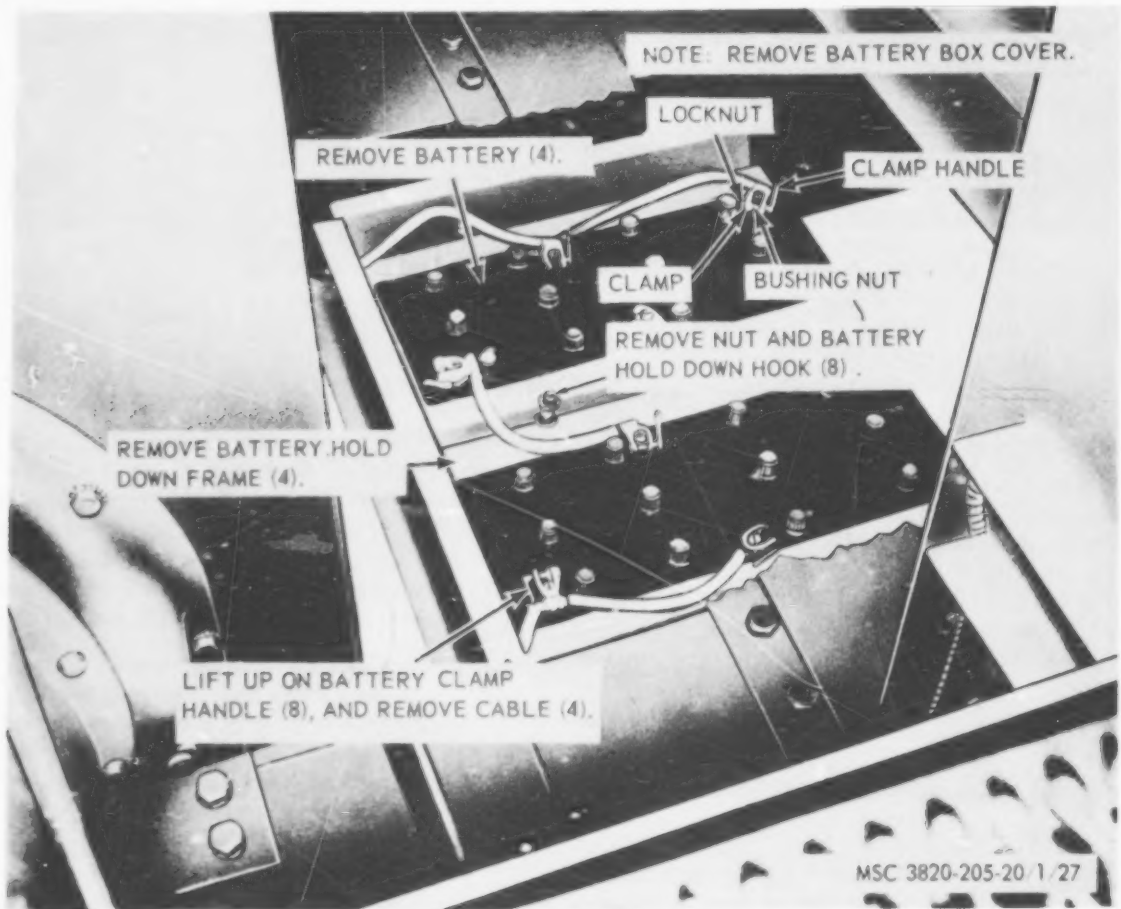


Figure 27. Batteries and cable, removal and installation.

e. Installation.

- (1) Install the battery box on the unit in reverse of the instructions on figure 28.
- (2) Install the batteries and cables (par. 76).

78. Battery Charging Receptacle

a. Removal. Remove the battery charging receptacle from the unit as instructed on figure 30.

b. Cleaning, Inspection, and Repair. Clean with a cloth dampened in an approved cleaning solvent. Replace a defective receptacle.

c. Installation. Install the battery charging receptacle on the unit in reverse of the instructions on figure 30.

79. Generator Regulator

a. Removal. Remove the generator regulator from the roll crusher as instructed on figure 31.

b. Cleaning, Inspection, and Repair. Clean and inspect. Replace damaged or defective generator regulator.

c. Installation. Install the generator regulator in reverse of the instructions on figure 31.

Caution: The engine generator must be polarized whenever the leads to the generator or regulator have been removed or any adjustments have been made to the generator regulator. Failure to polarize the generator may cause the regulator contacts to be damaged by vibration, heavy arcing, and burning. Polarize the generator by disconnecting the field lead at the regulator and momentarily connecting a jumper lead between the generator field terminal and the regulator battery terminal. Remove the jumper lead and connect field lead to the generator ((3), fig. 32).

d. Test and Adjustment.

(1) *Mechanical adjustment.*

- (a) Disconnect regulator - to - battery cable.
- (b) Remove regulator cover as instructed on figure 31.
- (c) Press down on the cutout relay armature ((1), fig. 32) until the

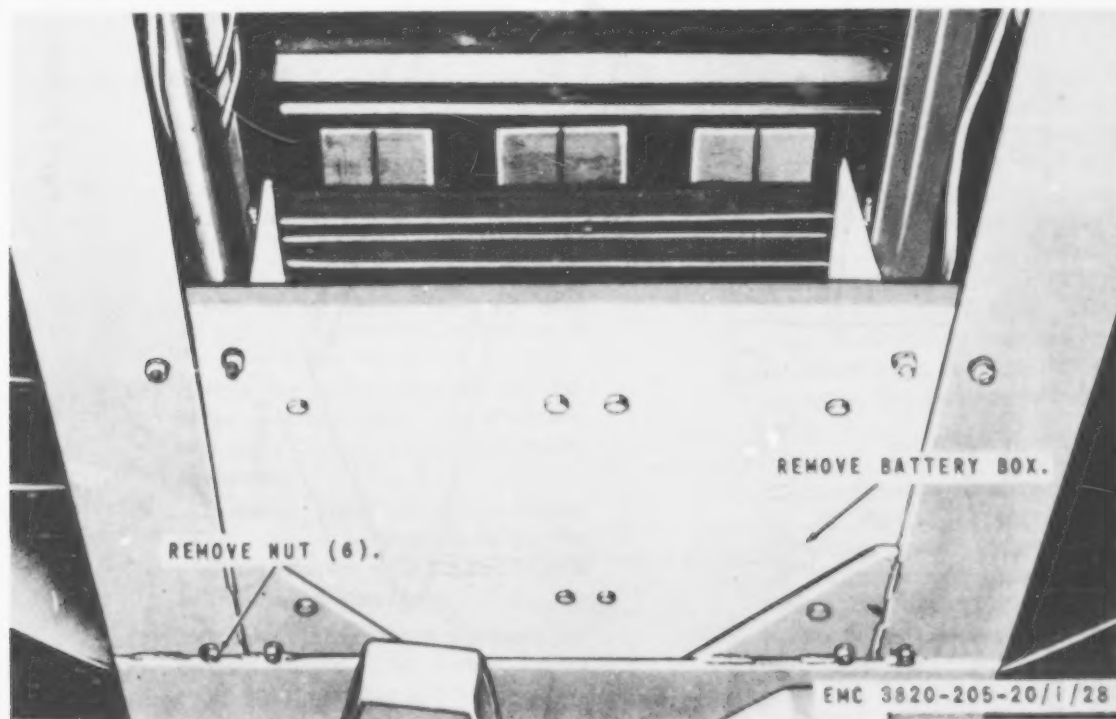


Figure 28. Battery box, removal and installation.

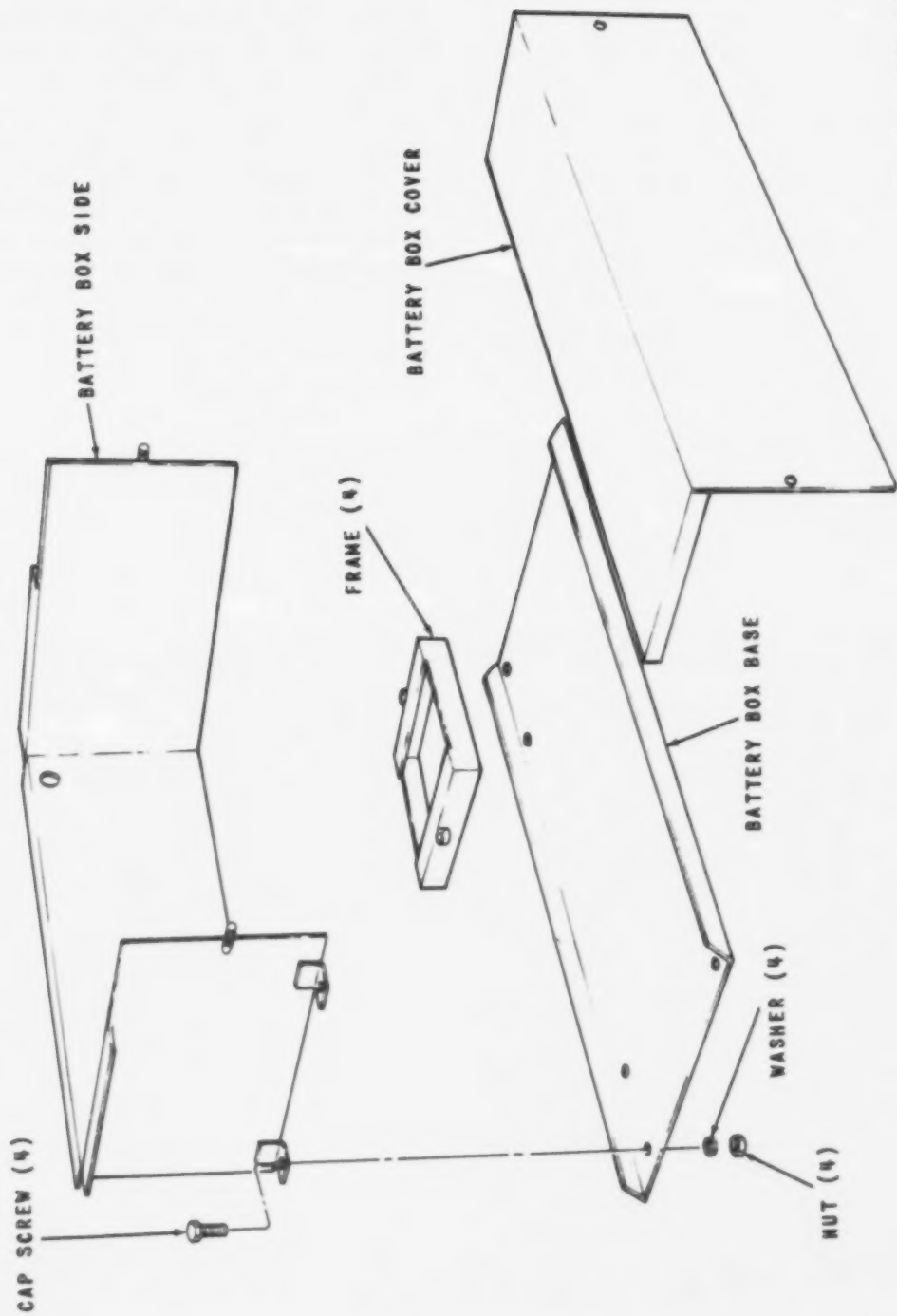


Figure 29. Battery box, exploded view.

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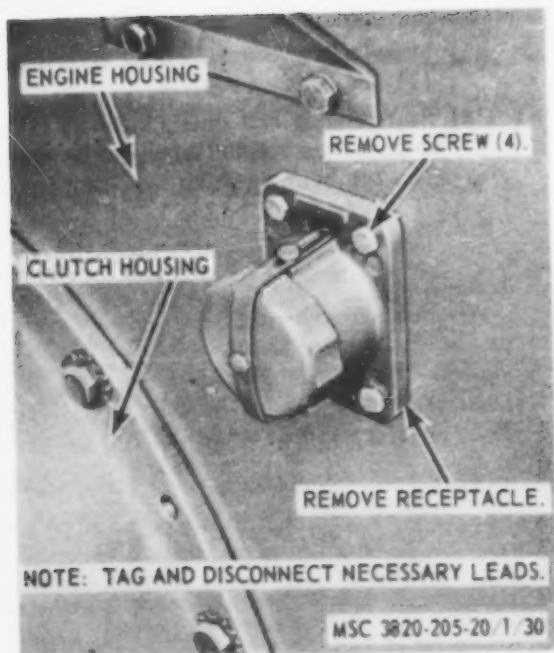


Figure 30. Battery charging receptacle, removal and installation.

contact points are barely touching. Measure the air gap between the coil core and armature. The correct air gap for the cutout relay is 0.048 inch.

Note. Do not measure the cutout relay air gap between the brass residual pin in the coil and the armature.

- (d) Should the cutout relay air gap not be as specified, bend the armature stop up or down to obtain the proper clearance.

Caution: Make certain the cutout relay contact bracket is in proper position to allow both contact points to close simultaneously.

- (e) Measure the clearance between the contact points. The proper cutout relay point opening is 0.035 inch.
- (f) If the cutout relay point opening is not as specified, loosen the two

screws securing the cutout relay contact bracket to the cutout relay and raise or lower the cutout relay contact bracket until the specified air gap is obtained. Secure the adjustment by tightening the two screws.

- (g) Push down on the voltage regulator armature ((2), fig. 32) until the voltage regulator contact point barely touches the air gap adjusting screw. Measure the air gap between the coil core and the armature of the voltage regulator. Do not measure between the core residual brass pin and the armature. Adjust the air gap adjusting screw to obtain the correct voltage regulator air gap of 0.084 inch.
 - (h) Adjust the current regulator air gap to 0.115 inch in the same manner as the voltage regulator unit adjustment described in (g) above.
- (2) *Electrical adjustments.* Install set of test adapters.

Note. Refer to (3), figure 32 and polarize the generator.

- (a) *Cutout relay closing voltage.* With voltmeter connected as shown on (4), figure 32, start the engine and slowly increase speed until the cutout relay contact points close. Observe voltage reading at which this occurs. It should be between 25 and 27 volts. If adjustment is necessary, turn cutout relay adjusting screw clockwise to increase or counterclockwise to decrease the closing voltage. Set closing voltage at 26 volts.
- (b) *Voltage regulator opening voltage.* With voltmeter connected as shown on (5), figure 32, increase rpm to operating speed. Observe reading on voltmeter. It should read between 27.5 and 29.5 volts. If adjustment is necessary, turn the voltage regulator adjusting screw clockwise to increase and counterclockwise to decrease. Set voltage at 28.5 volts.

- (c) *Current regulator maximum amperage.* With ammeter connected as shown on (6), figure 32, and either the test set carbon pile load set up at 25 to 30 amps or, first having operated the starter for 10 to 15 seconds to provide the load, increase rpm to operating speed, observe reading on ammeter at which points first vibrate. This should be between 38 and 42 amperes. If adjustment is necessary, adjust the current regulator to 40 amperes in the same manner as the voltage regulator was adjusted.
- (d) Replace generator regulator cover and repeat all tests before removing adapters. Run regulator voltage and amperage output through several cycles of increasing and decreasing engine speed from idle-to-operating-to-idle speed to make sure adjustments are stable.

- (e) Remove adapters and connect cables.
(f) Install regulator cover.

80. Generator and Bracket

a. On-unit Test.

- (1) Make a test connection as shown on (4), figure 32.
- (2) Start engine and slowly build up rpm to operating speed. Observe voltmeter. The minimum voltage is 27.5 volts.
- (3) If voltage is not built up to required value, generator is defective and must be replaced.

b. *Removal.* Remove the generator from the engine as instructed on figure 33.

Note. If removing bracket, remove the generator regulator (par. 79).

c. Cleaning, Inspection, and Repair.

- (1) Clean the generator with a cloth dampened with approved cleaning solvent.

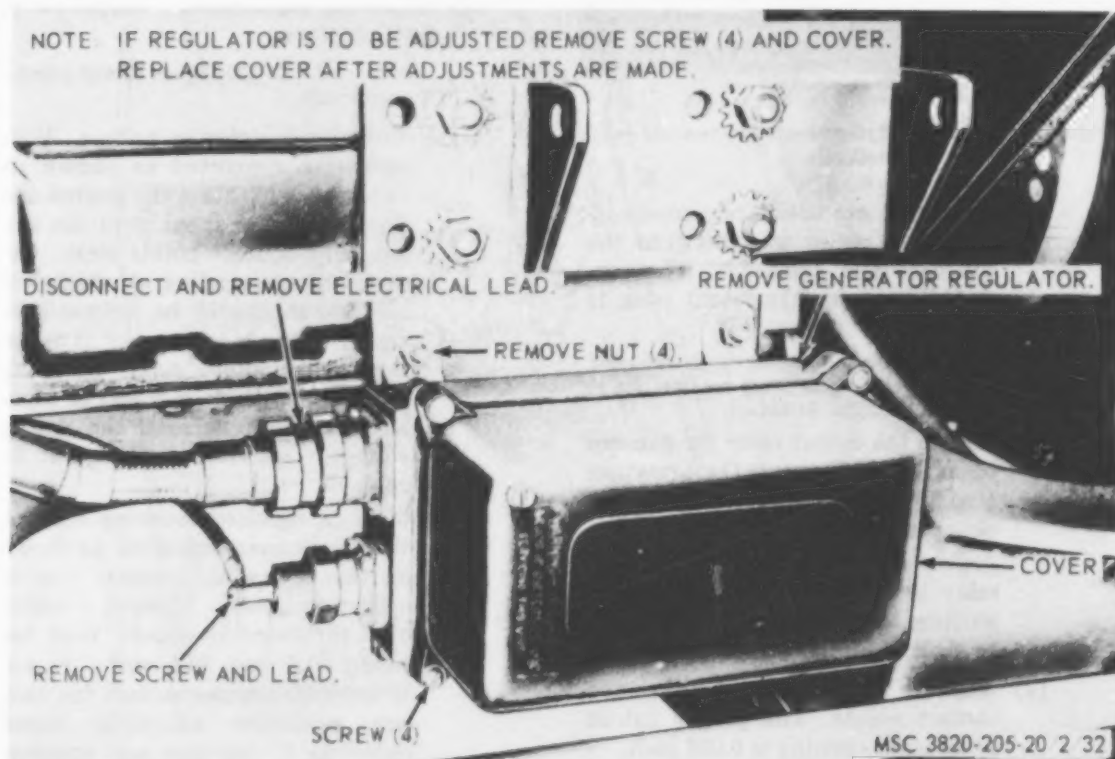
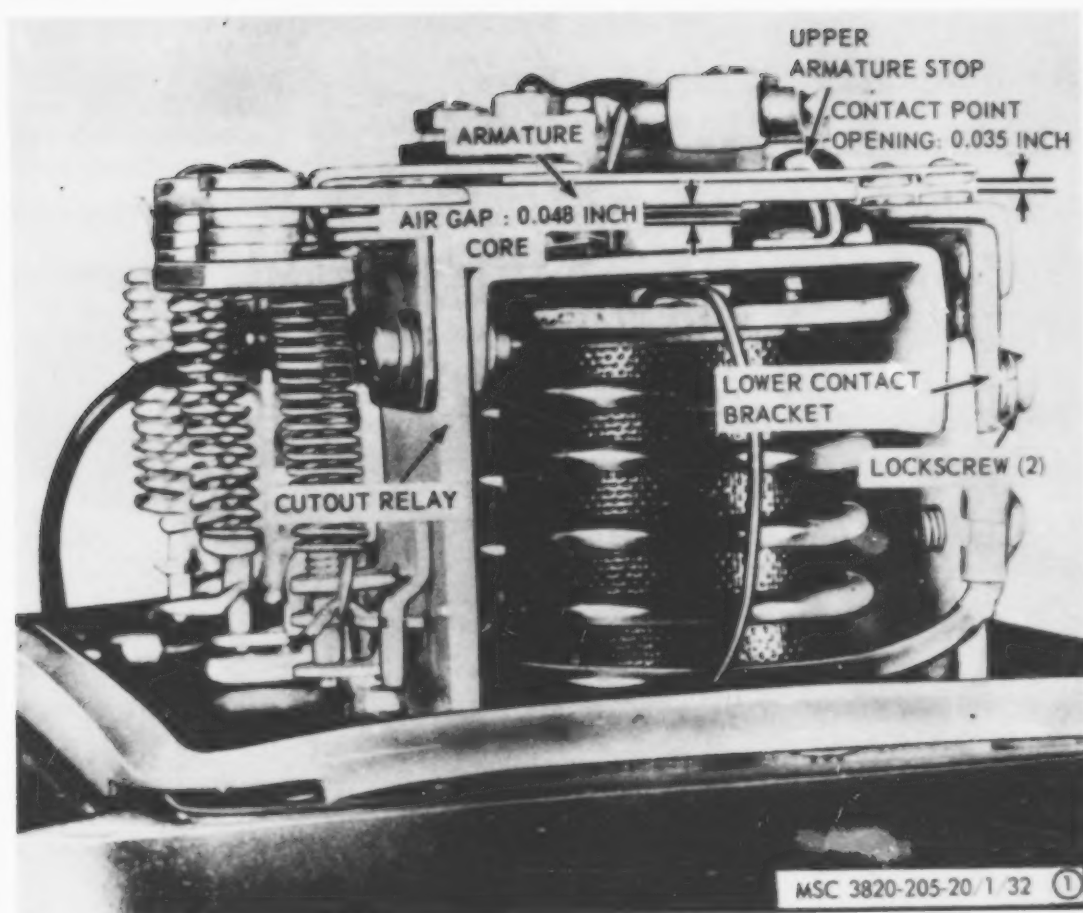
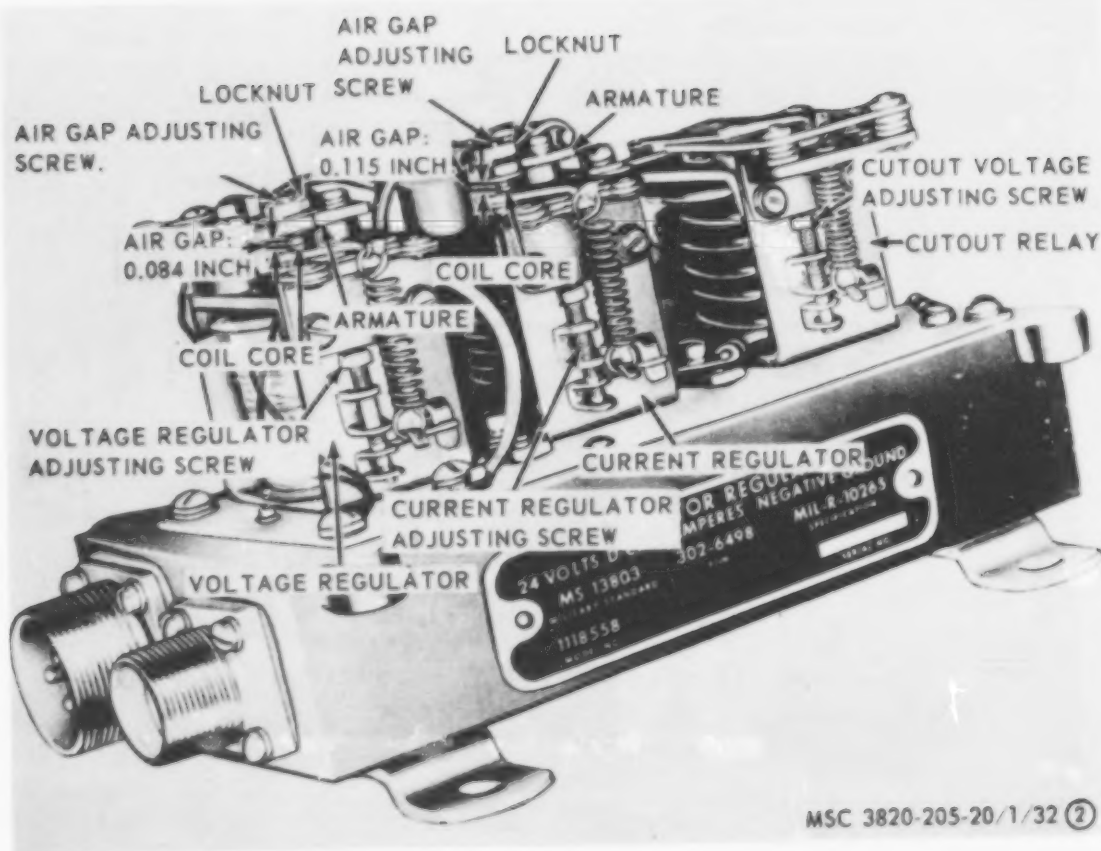


Figure 31. Generator regulator, removal and installation.



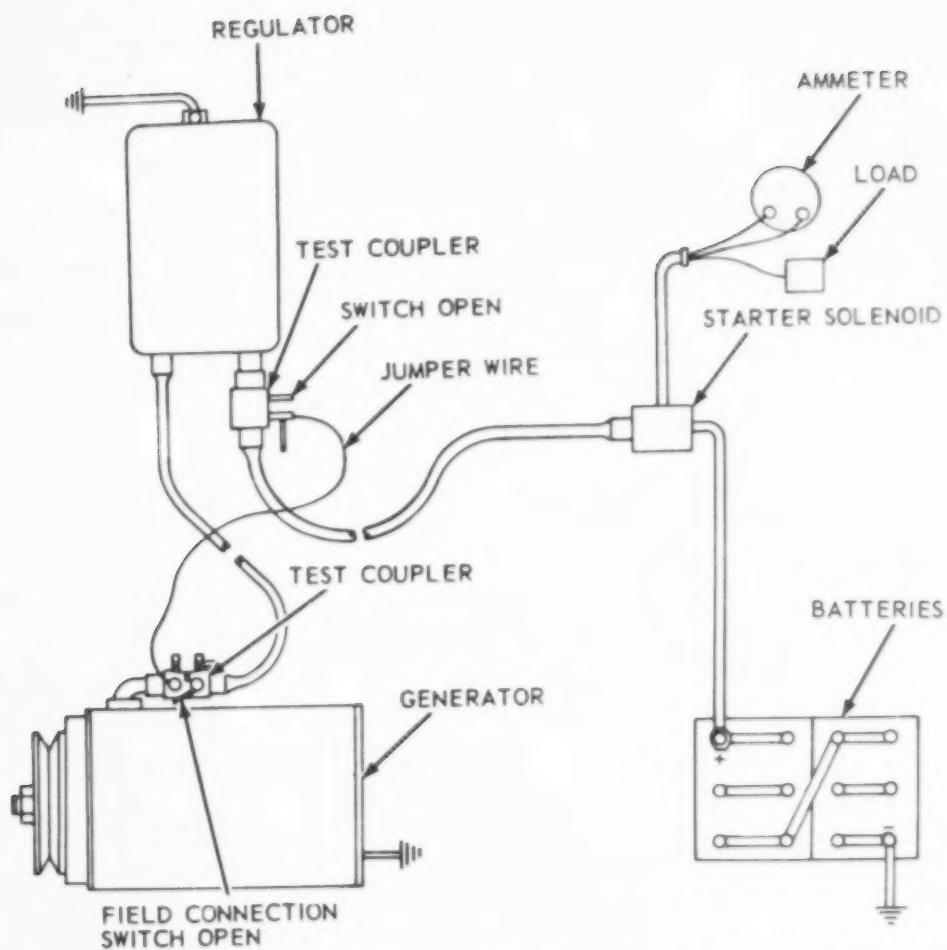
(1)

Figure 32. Generator regulator, adjustment and test wiring diagram.



(2)

Figure 32—Continued.

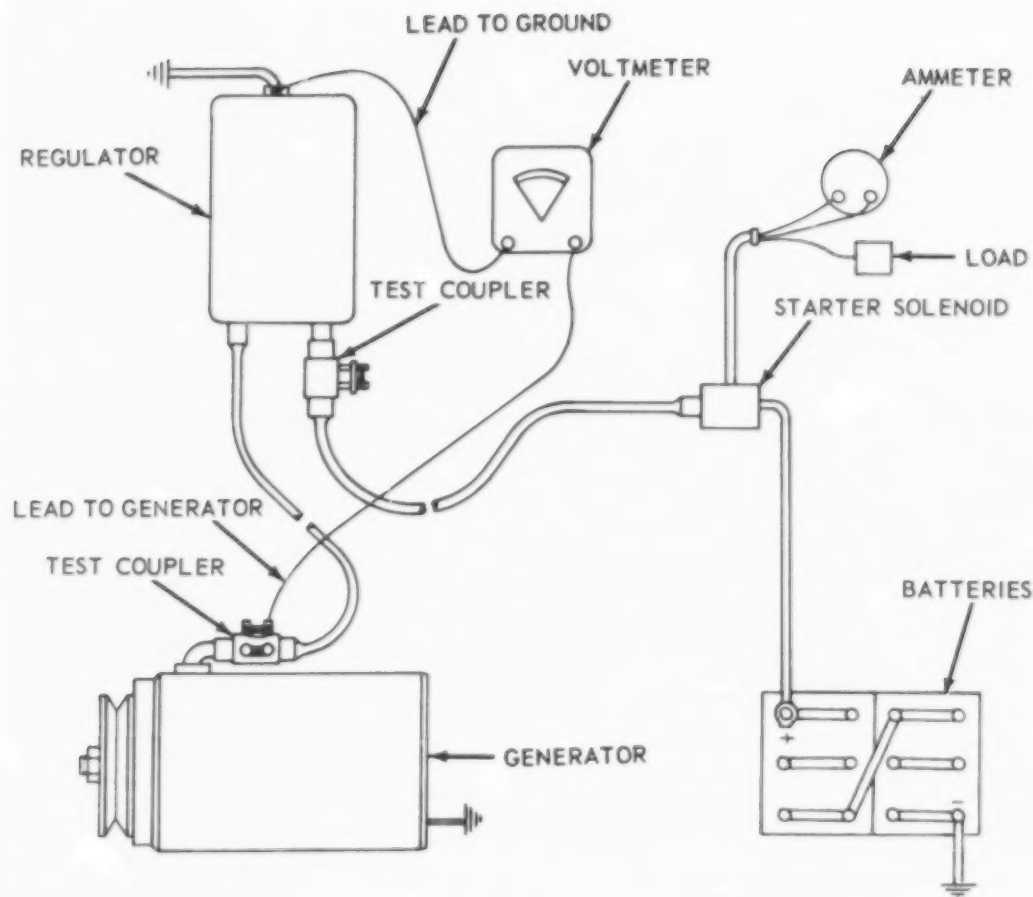


NOTE: MOMENTARILY CONNECT THE JUMPER WIRE AS ILLUSTRATED TO POLARIZE THE GENERATOR.

MSC 3820-205-20/2/33 (3)

(8)

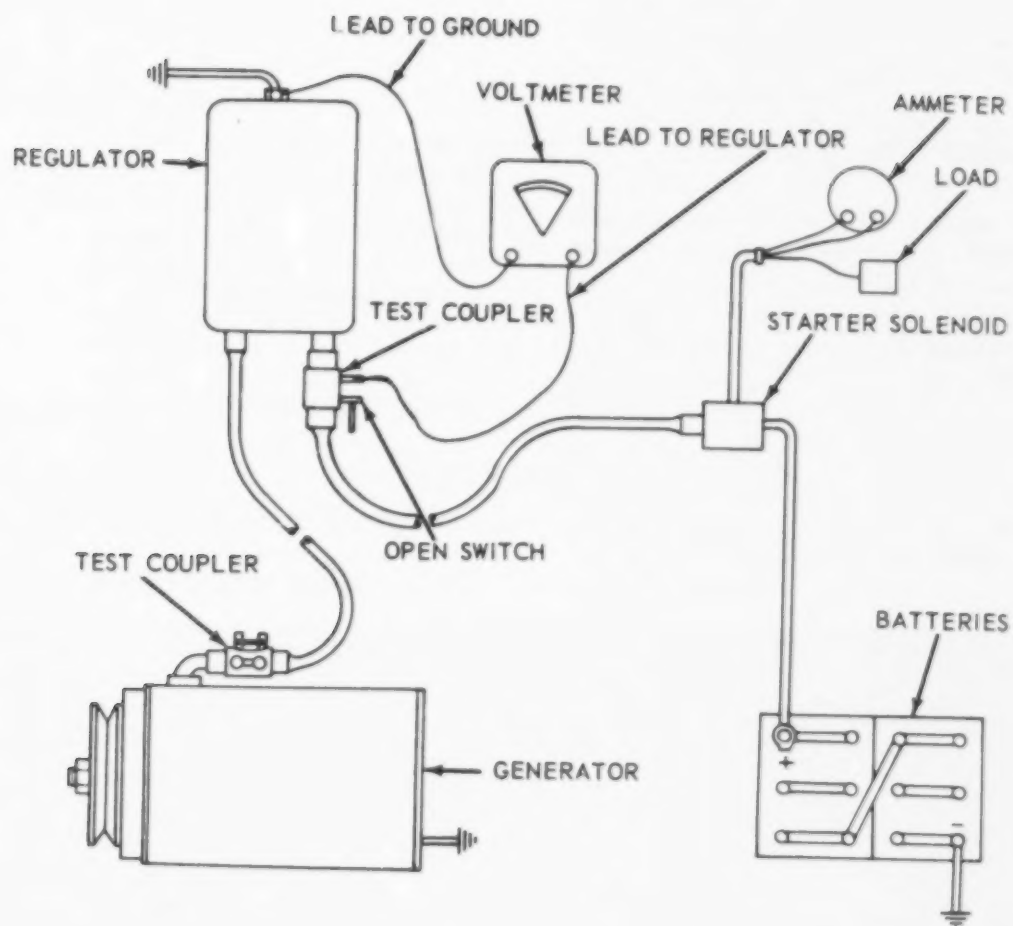
Figure 32—Continued.



MSC 3820-205-20/2/33 (4)

(4)

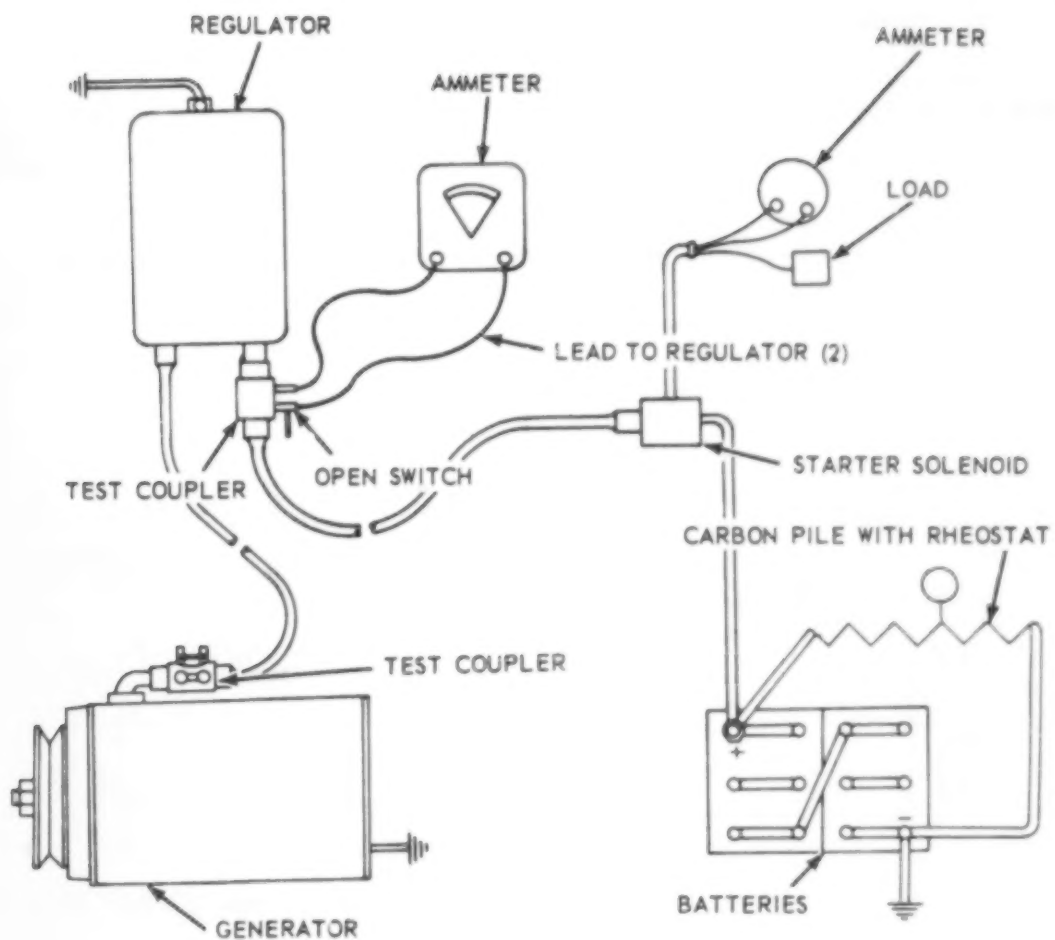
Figure 32—Continued.



MSC 3820-205-20/2/33 (5)

(5)

Figure 32—Continued.



MSC 3820-205-20/2/33 (6)

(6)

Figure 38—Continued.

- (2) Inspect the generator for loose assembly hardware.
- (3) Rotate the generator shaft to check for rough turning caused by defective bearings or dragging of the armature or the field pole shoes. Replace a defective generator.
- (4) Inspect and replace brushes as instructed in *d.* below.

d. Brush Replacement.

- (1) Remove the brushes from the generator as instructed on figure 34.
- (2) Inspect the brushes for worn or chipped condition. Replace brushes if worn to less than one-half inch in length. Inspect the armature commutator for burning, grooving, out-of-round, and high mica between segments. Replace a defective generator.
- (3) Install new brushes in reverse of the instructions on figure 34.

e. Installation.

- (1) Install the generator and mounting bracket on the engine in reverse of the instructions on figure 33.

- (2) Install the generator regulator (par. 79) if removed.
- (3) Adjust generator belts (TM 5-3820-205-10).

81. Starter Solenoid

a. On-equipment Test.

- (1) Connect a heavy jumper lead across the large terminals on the starter solenoid.
- (2) If the starter operates, the solenoid is defective. Replace a defective solenoid.

b. Removal. Remove the starter solenoid from the starter as instructed on figure 35.

c. Cleaning, Inspection and Repair. Clean and inspect. Replace a defective solenoid.

d. Installation. Install the starter solenoid on the starter in reverse of the instructions on figure 35.

82. Starter

a. On-equipment Test.

- (1) Connect a heavy jumper lead across the large terminals on the starter solenoid.

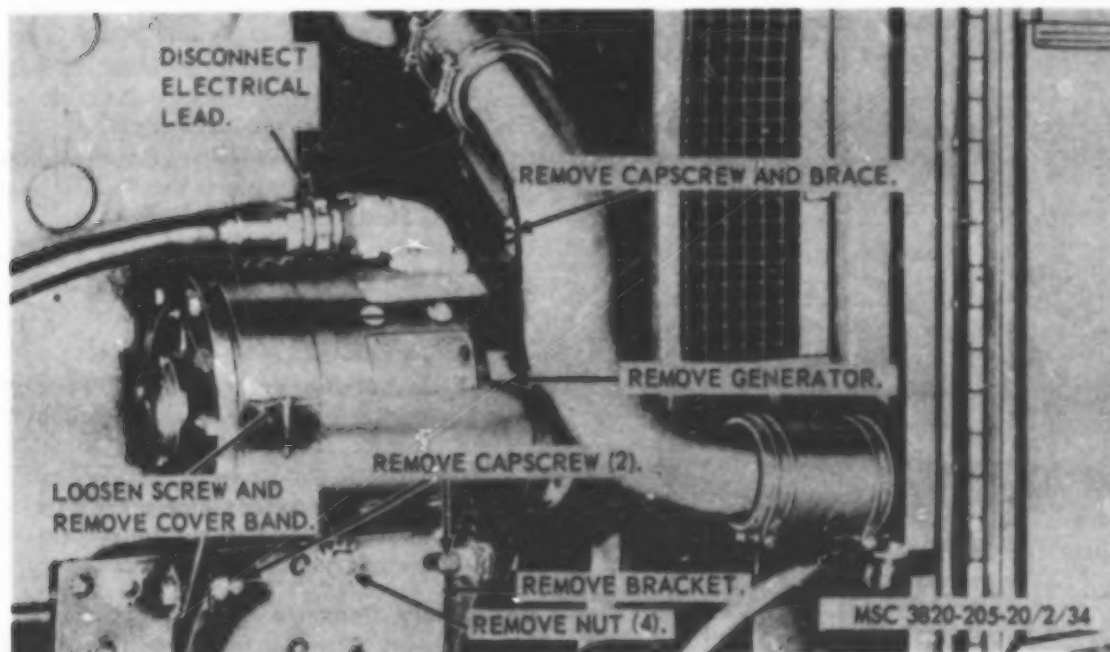


Figure 33. Generator, band, and mounting bracket, removal and installation.

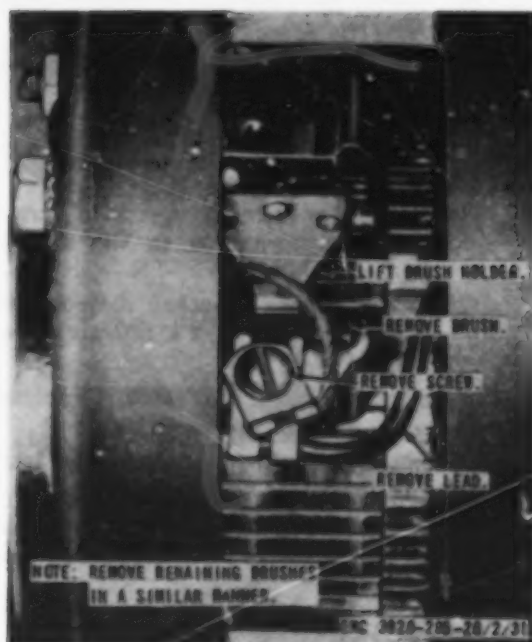


Figure 34. Generator brush, replacement.

- (2) If the starter does not operate, it is defective. Replace a defective starter.

b. Removal. Remove the starter from the engine as instructed on figure 35.

c. Cleaning, Inspection, and Repair.

- (1) Clean the starter with a cloth dampened with an approved cleaning solvent.
- (2) Replace a damaged or defective starter as necessary.

d. Brush Replacement.

- (1) Remove the cover band from the starter as instructed on figure 35.
- (2) Remove the brushes from the starter as instructed on figure 36.
- (3) Inspect the brushes for worn or chipped condition. Replace brushes if worn to less than one-half inch in length. Inspect the commutator for burning, grooving, and high mica between segments. Replace a defective starter.
- (4) Install new brushes in reverse of the instructions on figure 36.

- (5) Install the cover band on the starter in reverse of the instructions on figure 37.

e. Installation. Install the starter on the engine in reverse of the instructions on figure 35.

83. Oil Pressure Gage and Sending Unit

a. Removal.

- (1) Remove the oil pressure gage from the instrument panel as instructed on figure 37.
- (2) Remove the oil pressure gage sending unit from the engine as instructed on figure 38.

b. Cleaning and Inspection. Clean and inspect the oil pressure gage and sending unit for any damage. Replace as necessary.

c. Installation.

- (1) Install the oil pressure gage sending unit on the engine in reverse of the instructions on figure 38.
- (2) Install the oil pressure gage on the instrument panel in reverse of the instructions on figure 37.

84. Water Temperature Gage and Sending Unit

a. Removal.

- (1) Remove the water temperature gage from the instrument panel as instructed on figure 37.
- (2) Remove the water temperature gage sending unit from the water manifold as instructed on figure 39.

b. Cleaning and Inspection. Clean and inspect the water temperature gage and sending unit for damage. Replace as necessary.

c. Installation.

- (1) Install the water temperature gage sending unit on the water manifold in reverse of the instructions on figure 39.
- (2) Install the water temperature gage on the instrument panel in reverse of the instructions on figure 37.

85. Battery Generator Indicator

a. Removal. Remove the battery generator

indicator from the instrument panel as instructed on figure 37.

b. Cleaning and Inspection. Clean and inspect the battery generator indicator for damage. Replace as necessary.

c. Installation. Install the battery generator indicator in reverse of the instructions on figure 37.

86. Overspeed Governor

a. Removal. Remove the overspeed governor from the engine as instructed on figure 40.

b. Cleaning and Inspection. Clean and inspect the overspeed governor for damage. Replace a damaged overspeed governor.

c. Installation. Install the overspeed governor on the engine in reverse of the instructions on figure 40.

87. Safety Switch and Water Temperature Sending Unit

a. Removal. Remove the water temperature sending unit from the engine and safety switch from the instrument panel as instructed on figure 41.

b. Cleaning and Inspection. Clean and inspect the safety switch and water temperature sending unit for damage. Replace as necessary.

c. Installation. Install the water temperature sending unit on the engine and safety switch on the instrument panel in reverse of the instructions on figure 41.

88. Starting Switch

a. Removal. Remove the starting switch from the instrument panel as instructed on figure 37.

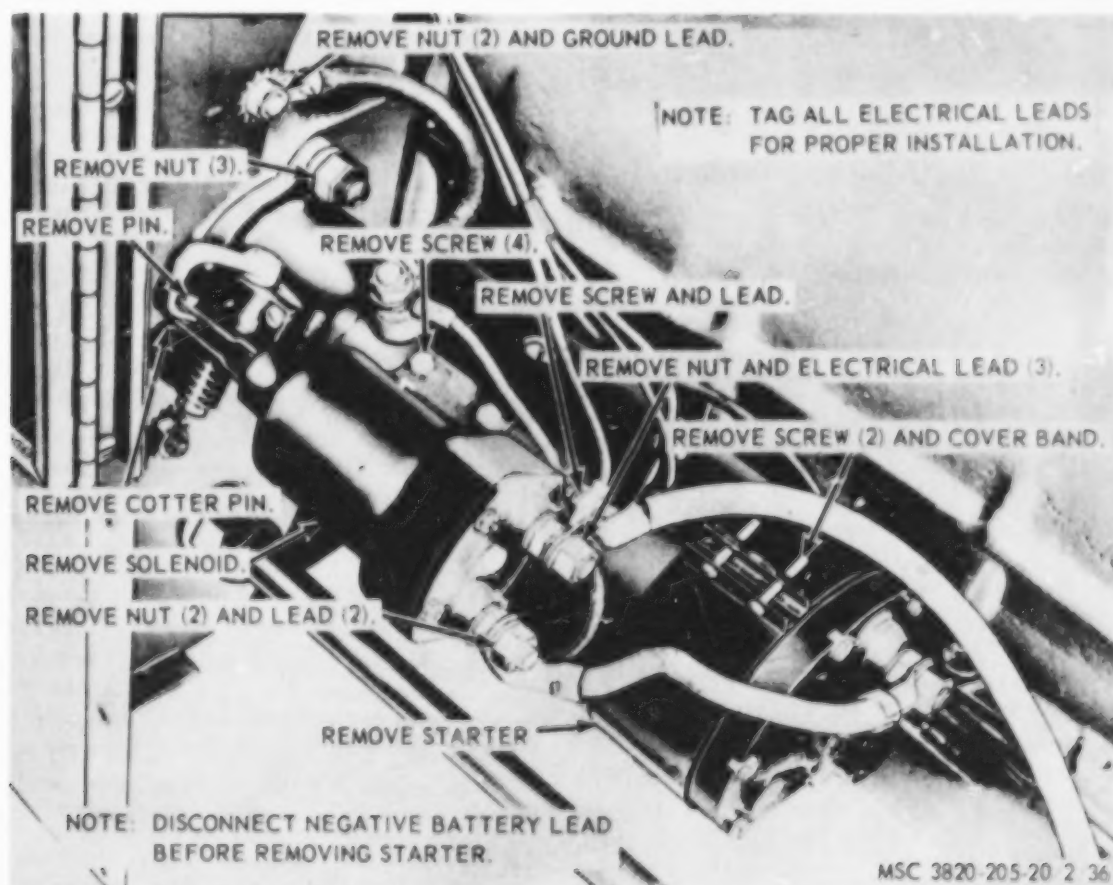


Figure 35. Starter, solenoid, and cover band, removal and installation.

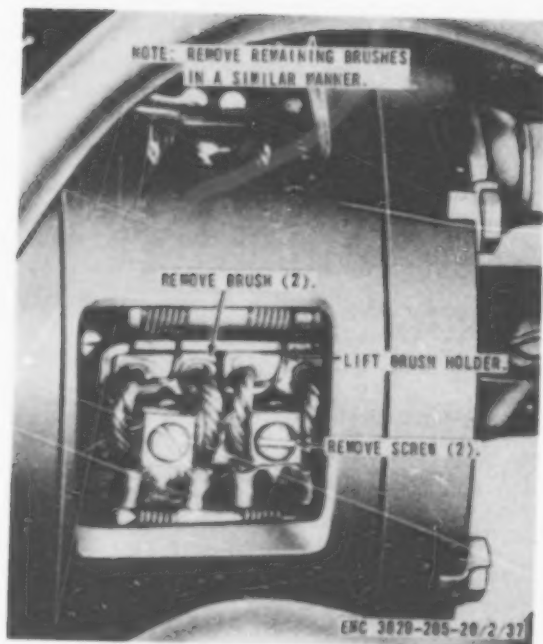


Figure 36. Starter brush, replacement.

b. Cleaning and Inspection. Clean and inspect the starting switch for improper operation or damage. Replace as necessary.

c. Installation. Install the starting switch on the instrument panel in reverse of the instructions on figure 37.

89. Engine Wiring and Warning Lights

a. Wiring.

- (1) *Removal.* Remove the engine wiring from the engine as instructed on figures 37 and 41.
- (2) *Cleaning, inspection, and Repair.* Clean and inspect the engine wiring. Repair or replace as necessary.
- (3) *Installation.* Install the engine wiring in reverse of the instructions on figures 37 and 41.

b. Warning Lights.

- (1) *Removal.* Remove the warning light assembly as instructed on C, figure 41.
- (2) *Cleaning, Inspection, and Repair.* Clean and inspect, repair as necessary.
- (3) *Installation.* Install the warning lights in the reverse of the instructions on C, figure 41.

Section VI. ENGINE HOUSING

90. General

The engine housing is constructed of pre-formed sheet metal which is comprised of doors, door supports, side panels, hood, rear panel, and radiator cowl with the necessary hardware to construct the housing.

91. Water Drain Lines

a. Removal. Remove the drain lines from the housing as instructed on figure 42.

b. Cleaning and Inspection. Clean and inspect all lines and replace as necessary.

c. Installation. Install the drain lines on the housing in reverse of the instructions on figure 42.

92. Doors

a. Removal. Remove the doors from the housing as instructed on figure 43.

b. Cleaning, Inspection, and Repair. Clean

and inspect the doors for any damage. Repair or replace as necessary.

c. Installation. Install the doors on the housing in reverse of the instructions on figure 43.

93. Engine Door Supports and Side Panels

a. Removal.

- (1) Remove the water lines (par. 91).
- (2) Remove the doors (par. 92).
- (3) Remove the engine door supports and side panels from the housing as instructed on figure 44.

b. Cleaning and Inspection. Clean and inspect the engine door supports and side panels for any damage and replace as necessary.

c. Installation.

- (1) Install the engine side panels and door supports on the housing in reverse of the instructions on figure 44.

(2)) Install the water drain lines (par. 91).

(3) Install the engine doors (par. 92).

94. Hood, Radiator Cowling, and Rear Panel

a. Hood and Radiator Cowling Removal.

(1) Remove the muffler (par. 73).

(2) Remove the door supports and side panels (par. 93).

(3) Remove the hood and radiator cowling from the unit as instructed on figure 44.

b. Rear Panel Removal.

(1) Remove the air cleaner (par. 59).

(2) Remove the ether starting aids (par. 62).

(3) Remove the safety ignition switch (par. 87).

(4) Remove the tachometer-hourmeter (par. 54).

(5) Remove the indicator gages (pars. 83-85, and 88).

(6) Remove the rear panel from the unit as instructed on figure 44.

c. *Cleaning, Inspection, and Repair.* Clean and inspect. Replace or repair worn, damaged, or defective parts as necessary.

d. Hood and Radiator Cowling Installation.

(1) Install the hood and radiator cowling on the unit in reverse of the instructions on figure 44.

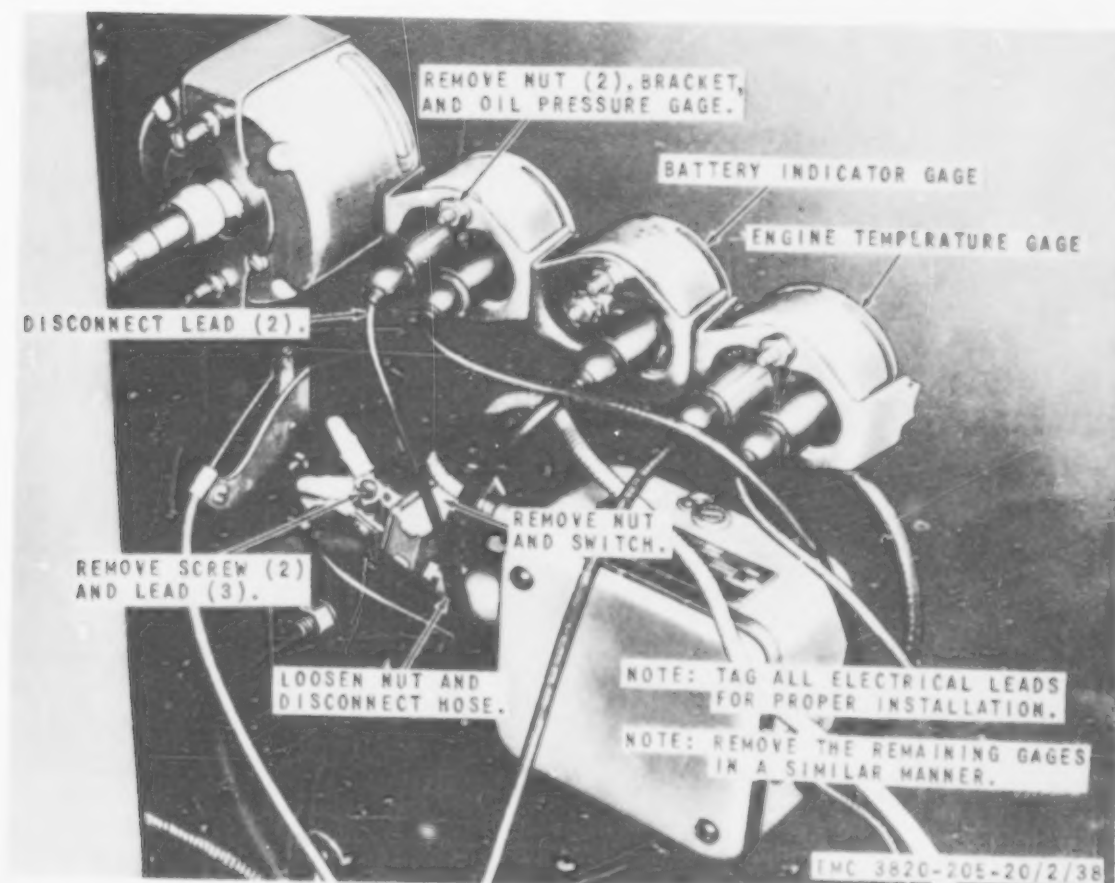


Figure 37. Gages and switch, removal and installation.

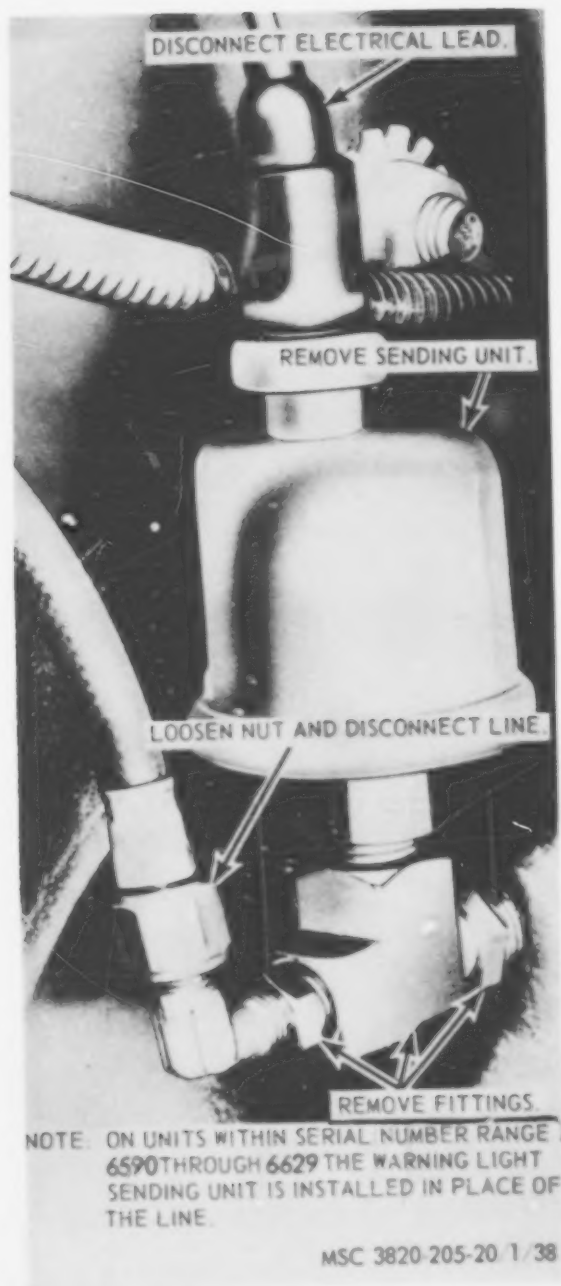


Figure 38. Oil pressure gage sending unit, removal and installation.

- (2) Install the door supports and side panels (par. 93).
- (3) Install the muffler (par. 73).

e. Rear Panel Installation.

- (1) Install the rear panel on the unit in reverse of the instructions on figure 44.
- (2) Install the indicator gages (pars. 83-85, and 88).
- (3) Install the tachometer - hourmeter (par. 54).
- (4) Install the safety ignition switch (par. 87).
- (5) Install the ether starting aids (par. 62).
- (6) Install the air cleaner (par. 59).

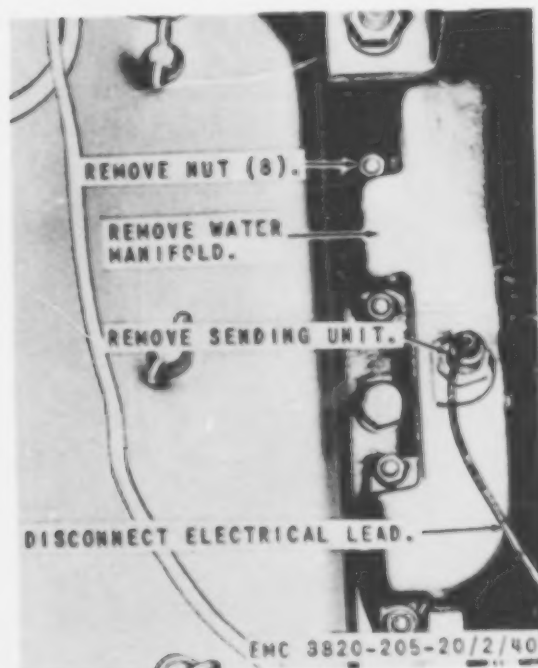


Figure 39. Water temperature gage sending unit and manifold, removal and installation.

Section VII. VALVE COVER AND ROCKER ARM ASSEMBLIES

95. General

The engine intake and exhaust valves are located in the two cylinder heads. There are three intake and three exhaust valves, rocker arms, and rocker arm adjusting screws located under each valve cover. The valve covers and breather must be removed to perform rocker arm adjustment, or to check valve closing when setting ignition timing.

96. Valve Covers and Breather

a. Removal.

- (1) Remove the engine hood (par. 94).
- (2) Remove the two valve covers and breather from the engine as instructed on figure 45.

b. Cleaning and Inspection. Clean and in-

spect all parts. Replace gaskets and damaged parts.

c. Installation.

- (1) Install the two valve covers and breather on the engine in reverse of the instructions on figure 45.
- (2) Install the engine hood (par. 94).

97. Rocker Arms Adjustment

a. Remove the valve covers and breather (par. 96).

b. Adjust each of the 6 intake valve rocker arms and the 6 exhaust valve rocker arms as instructed on figure 46.

c. Install the valve covers and breather (par. 96).

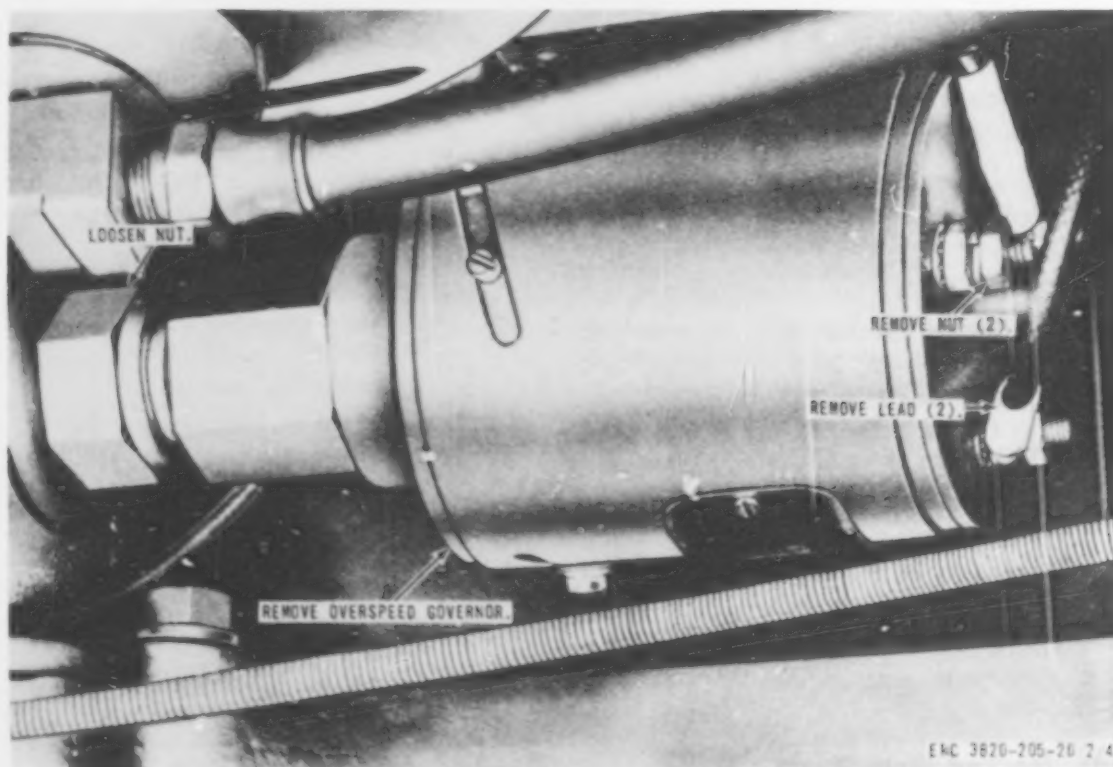


Figure 40. Overspeed governor, removal and installation.

Section VIII. ENGINE COOLING SYSTEM

98. General

The engine cooling system consists of a fan, guard, radiator and shroud, thermostats and housing, water manifolds, water pump, and suitable hoses, lines, and clamps. The water pump takes the water from the bottom of the radiator and circulates the water through the engine block for cooling the engine. The water temperature is controlled by the thermostats to keep the engine at operating temperature. The water is cooled by the fan pulling air through the radiator fins as the water passes through the radiator.

99. Fan Guard

a. Removal. Remove the fan guard from the shroud as instructed on figure 47.

b. Cleaning and Inspection. Clean and inspect the fan guard for any damage. Replace as necessary.

c. Installation. Install the fan guard on the shroud in reverse of the instructions on figure 47.

100. Fan Belts

a. Removal.

- (1) Remove the fan guard (par. 99).
- (2) Remove the fan belts from the fan pulley as instructed on figure 47.

b. Cleaning and Inspection. Clean and inspect the fan belts for fraying or any other damage. Replace as necessary.

c. Installation.

- (1) Install the fan belts on the fan pulley in reverse of the instructions on figure 47.
- (2) Install the fan guard (par. 99).

d. Adjustment. Adjust the fan belts (TM 5-3820-205-10/1).

101. Fan and Water Pump

a. Removal.

- (1) Drain the cooling system (TM 5-3820-205-10/1).
- (2) Remove fan belts (par. 100).

- (3) Remove the fan and water pump from the engine as instructed on figure 48.

b. Cleaning and Inspection. Clean and inspect the fan and water pump for damage. Replace as necessary.

c. Installation.

- (1) Install the fan and water pump on the engine in reverse of the instructions on figure 48.
- (2) Install the fan belts (par. 100).
- (3) Fill the cooling system (TM 5-3820-205-10/1).

102. Radiator Shroud

a. Removal.

- (1) Drain cooling system (TM 5-3820-205-10/1).
- (2) Remove the engine hood (par. 94).
- (3) Remove the radiator shroud from the housing as instructed on figure 49.

b. Cleaning and Inspection. Clean and inspect the radiator shroud. Replace as necessary.

c. Installation.

- (1) Install the radiator shroud on the housing in reverse of the instructions on figure 49.
- (2) Install the fan (par. 101).
- (3) Install the engine hood (par. 94).
- (4) Fill the cooling system (TM 5-3820-205-10/1).

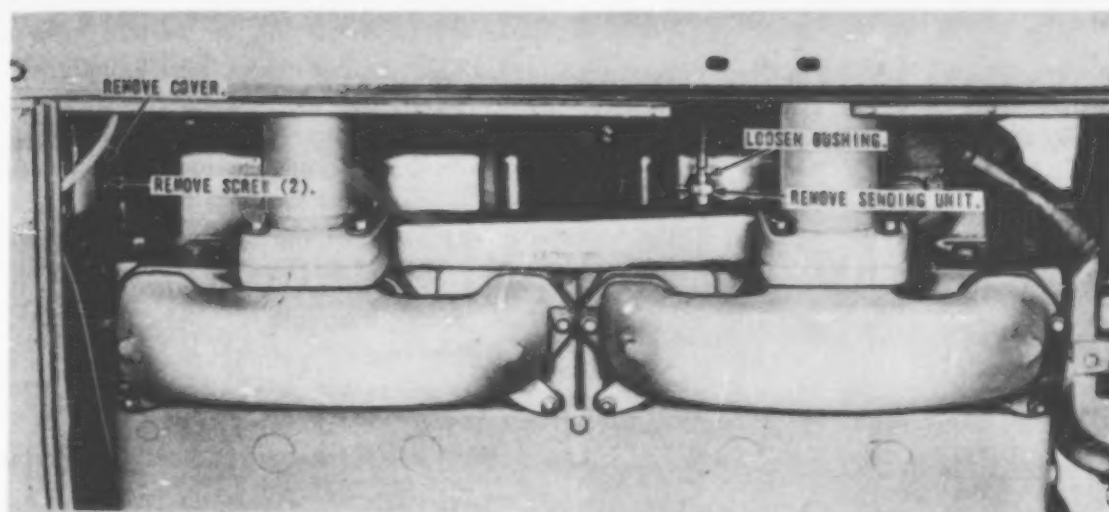
103. Thermostats and Housing

a. Removal.

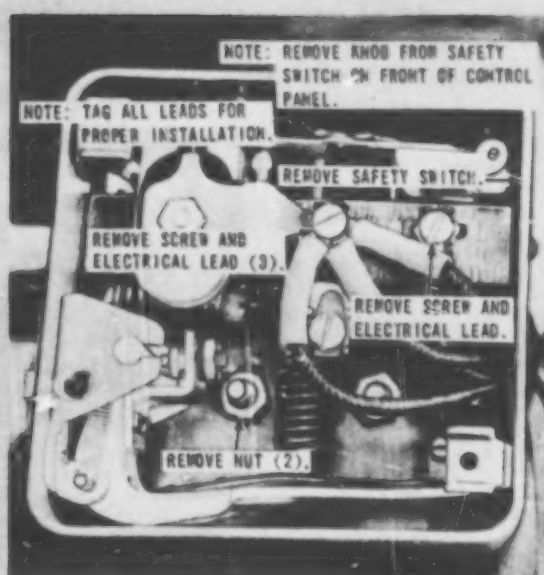
- (1) Drain cooling system (TM 5-3820-205-10/1).
- (2) Remove the thermostats and housing from the engine as instructed on figure 50.

b. Cleaning and Inspection. Clean and inspect the thermostats and housing. Replace if necessary.

c. Test. Place the thermostat and suitable thermometer in a pan or pail of water and



A



B

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A--Water temperature sending unit installed.
B--Safety switch installed (on units of equipment within serial number range 6580 through 6587 only)

Figure 41. Safety switch, water temperature sending unit and warning lights, removal and installation.



C—Low oil pressure and high water temperature warning lights (on units of equipment within serial number range 6590 through 6629 only)

Figure 41—Continued.

heat slowly. The thermostat should start to open at 165° to 175° F. and be fully open at 180° to 185° F. Replace a defective thermostat.

d. Installation.

- (1) Install the thermostats and housing on the engine in reverse of the instructions on figure 50.
- (2) Fill the cooling system (TM 5-3820-205-10/1).

104. Water Manifold

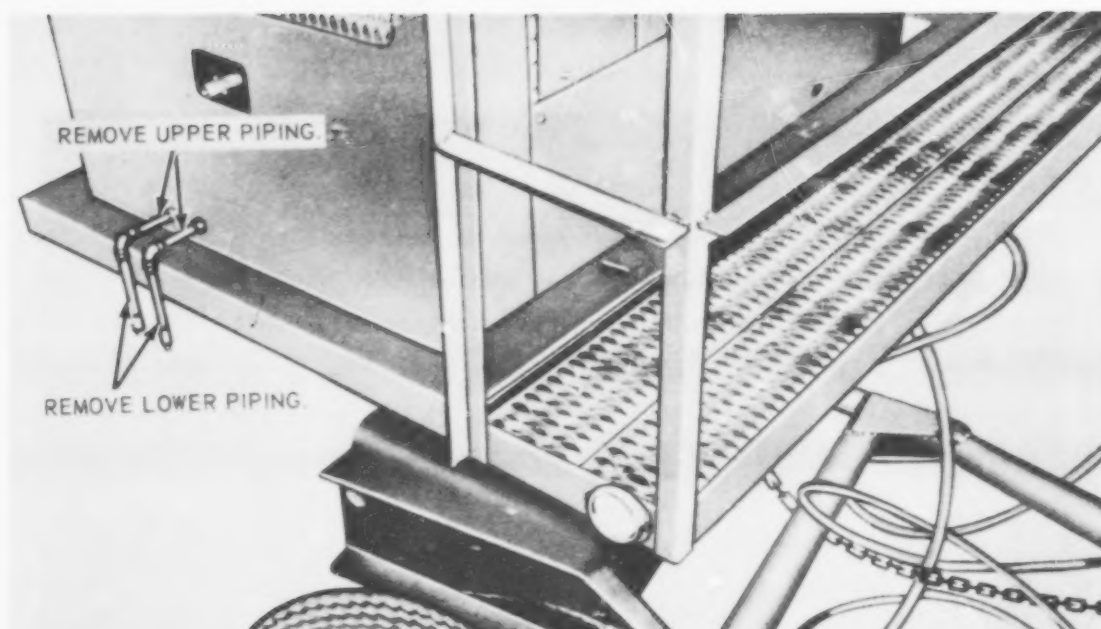
a. Removal.

- (1) Drain the cooling system (TM 5-3820-205-10/1).
- (2) Remove the thermostats and housing (par. 103).
- (3) Remove the water manifold from the engine as instructed on figure 39.

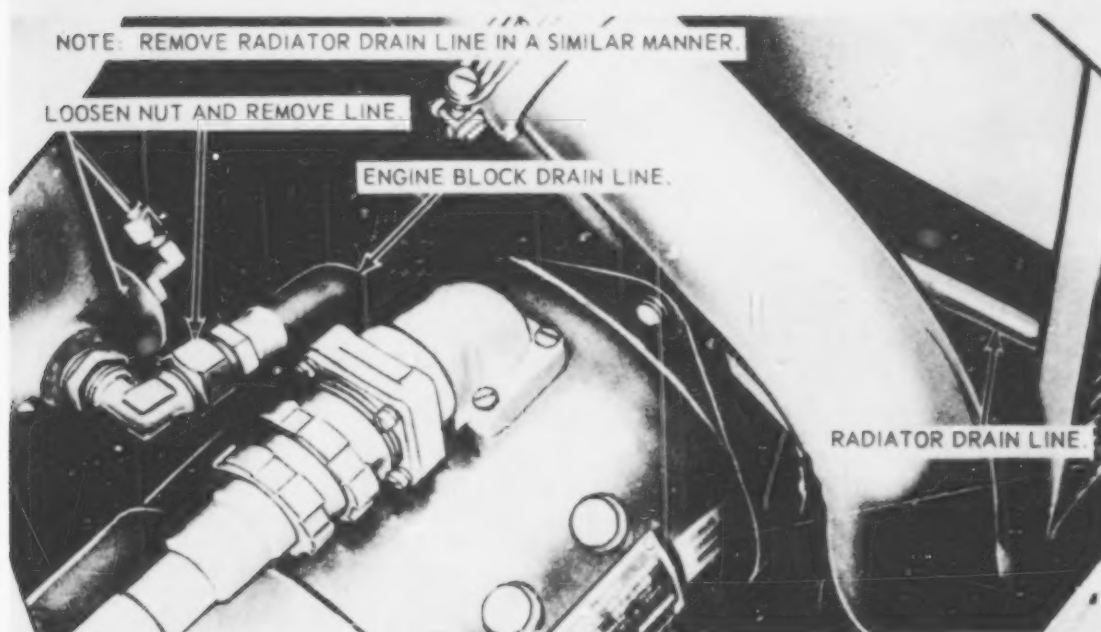
b. Cleaning and Inspection. Clean and inspect the water manifold for any damage and replace as necessary.

c. Installation.

- (1) Install the water manifold on the engine in reverse of the instructions on figure 39.
- (2) Install the thermostats and housing (par. 103).
- (3) Fill the cooling system (TM 5-3820-205-10/1).



A



B

MSC 3820-205-20 / 1 / 42

A - Water lines installed outer.
B - Water lines installed inner.

Figure 42. Drain lines, removal and installation.

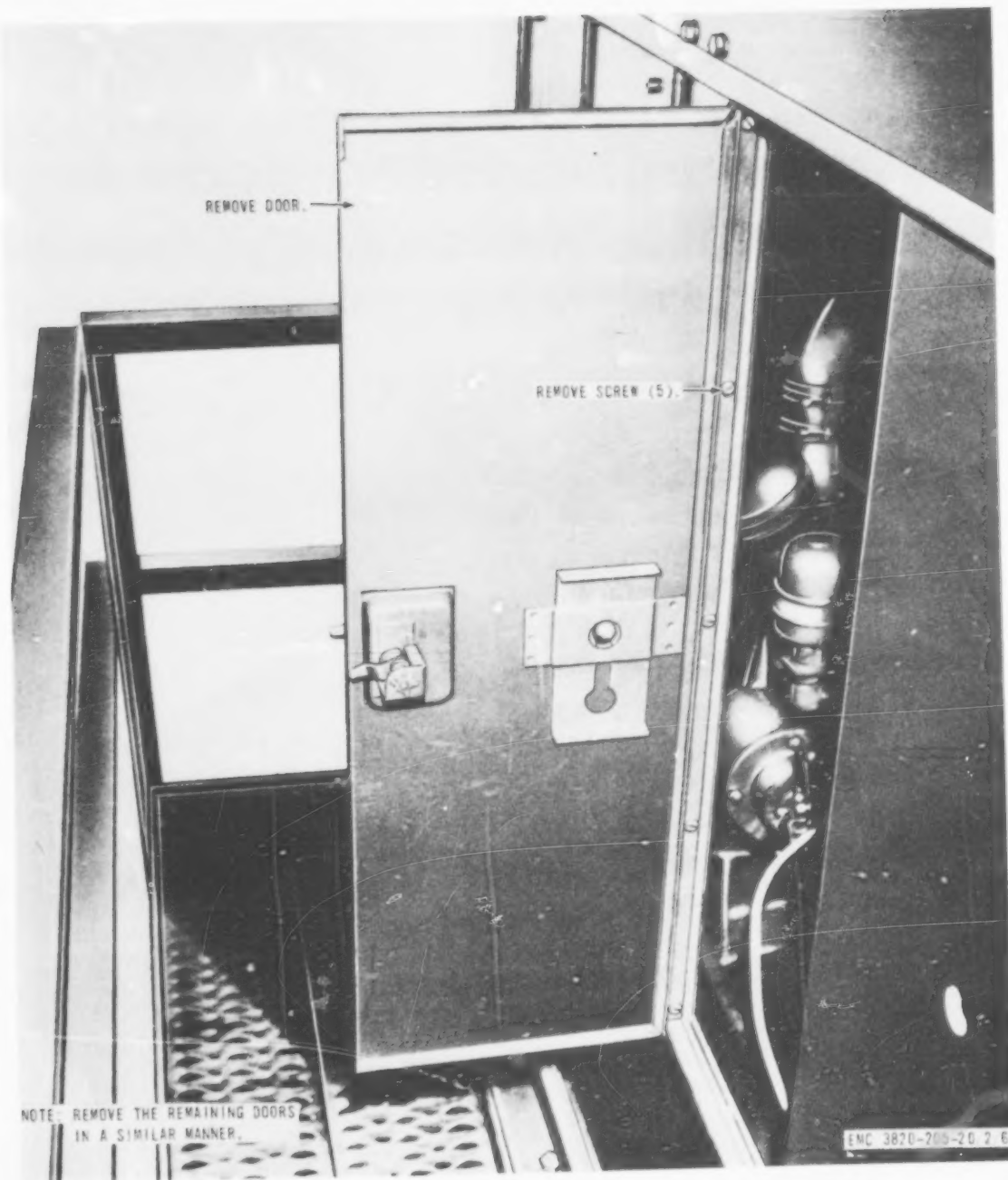


Figure 43. Doors, removal and installation.

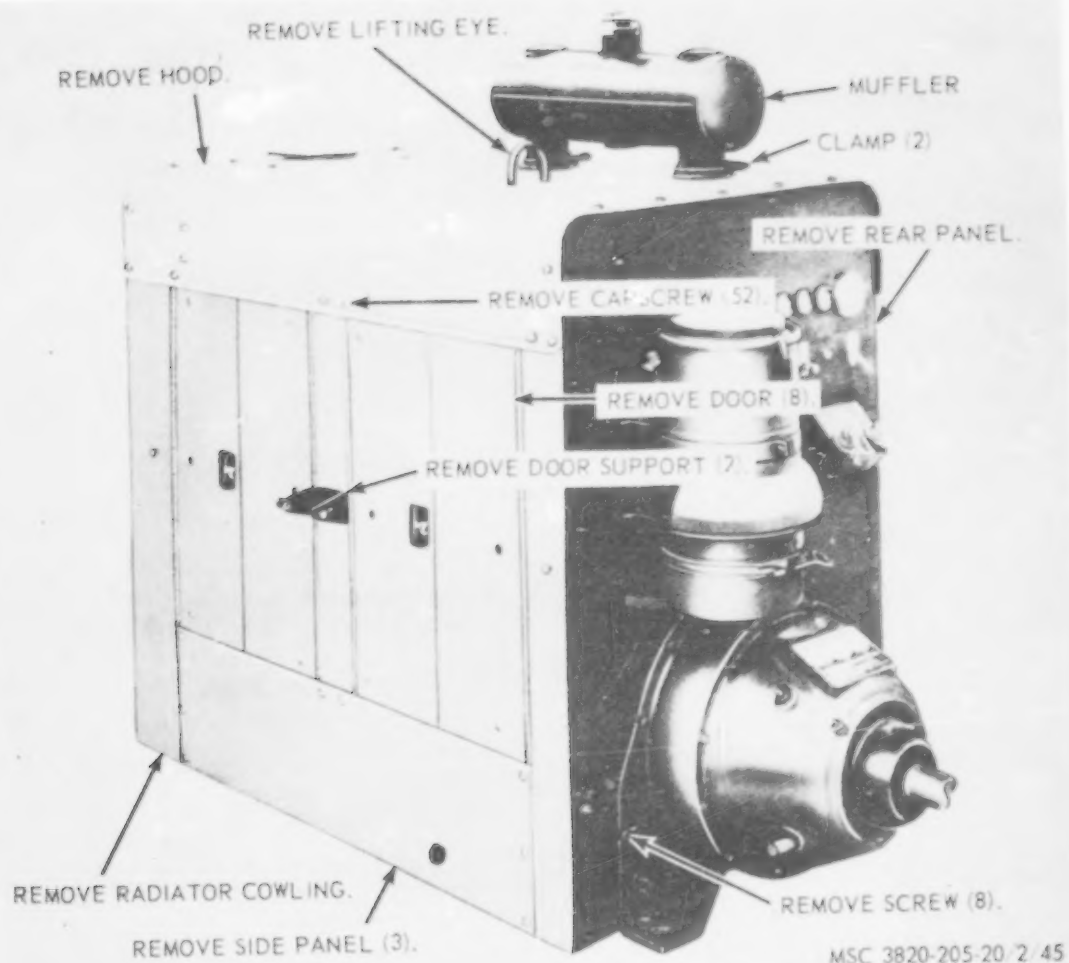


Figure 44. Engine housing, removal and installation.

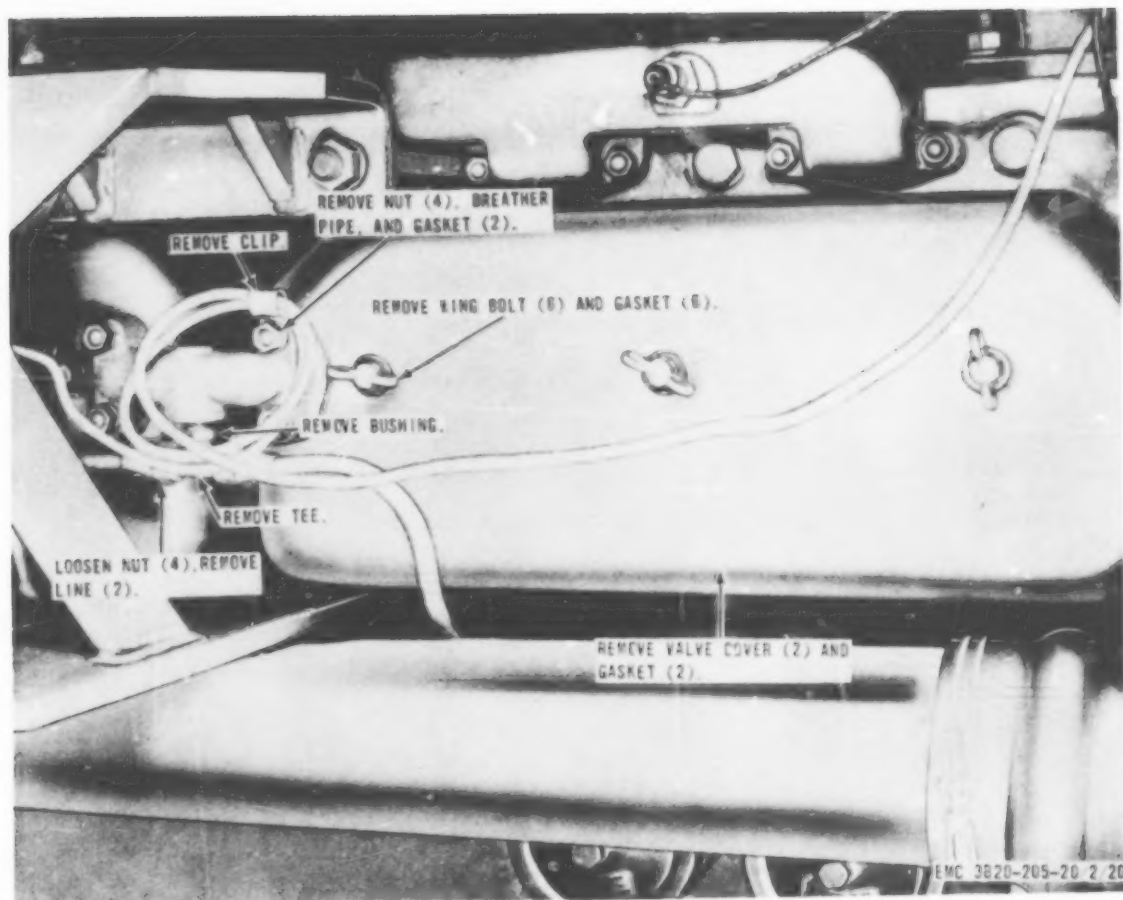


Figure 45. Valve covers and breather, removal and installation.

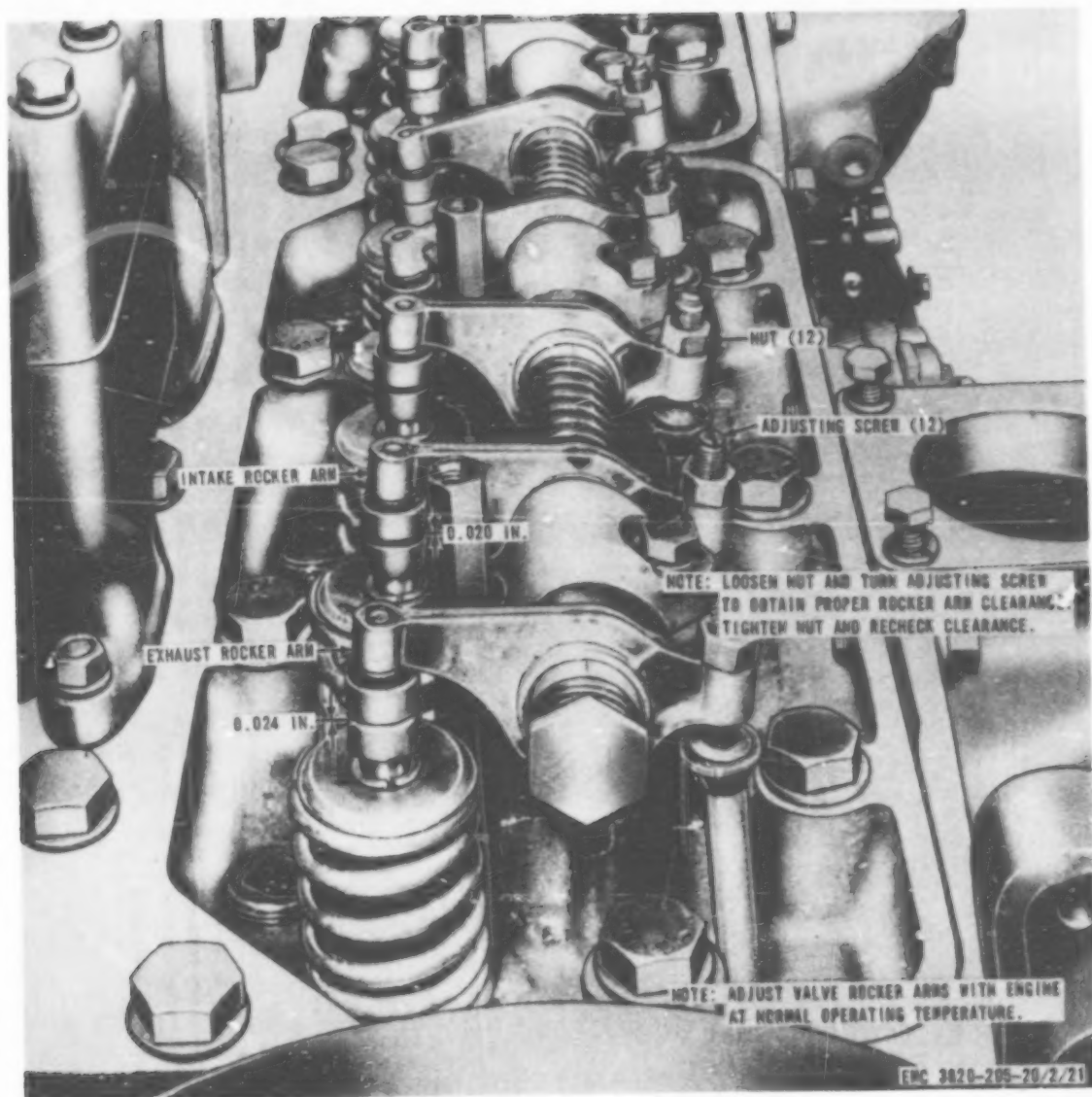


Figure 46. Rocker arm, adjustment.

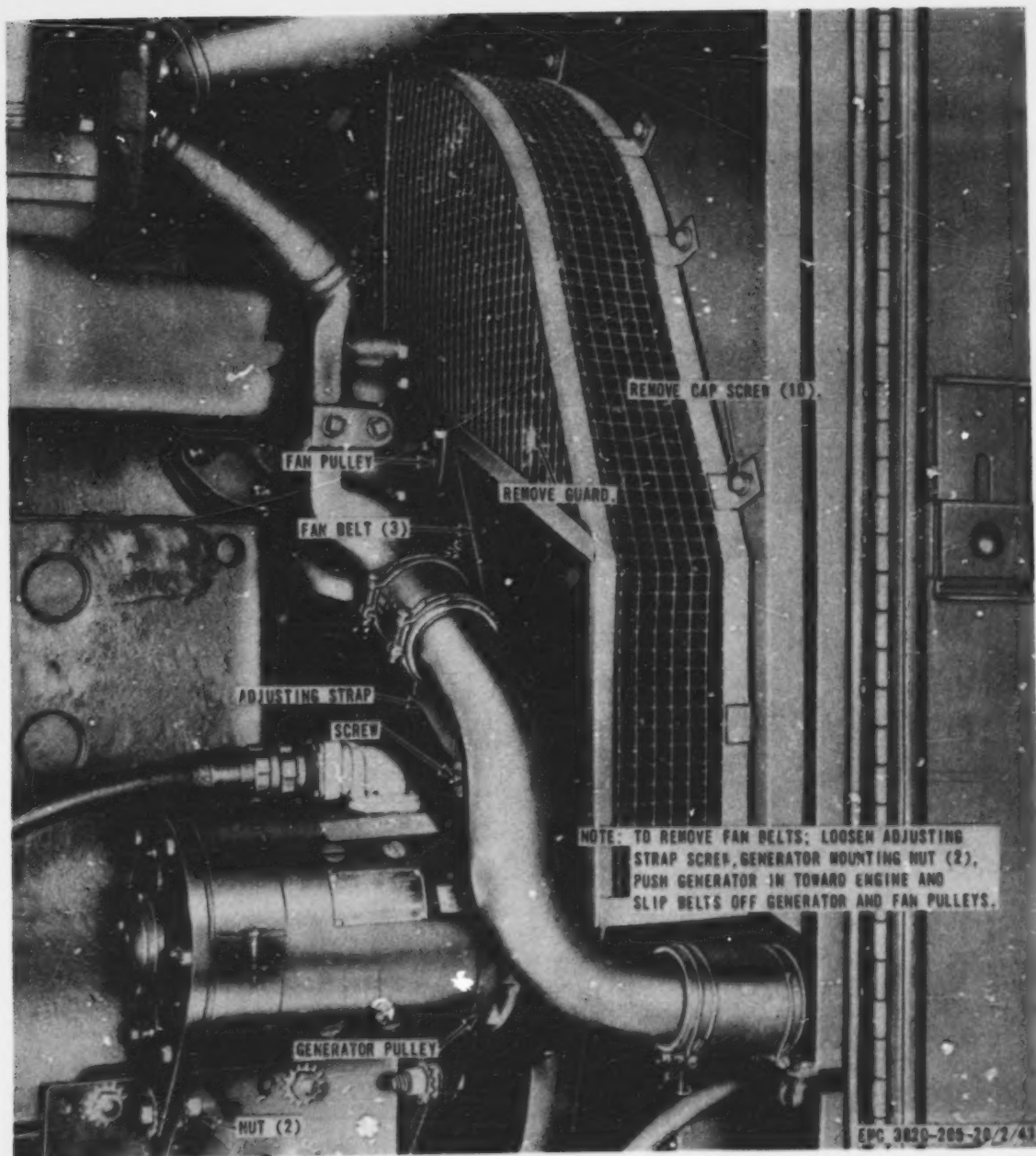
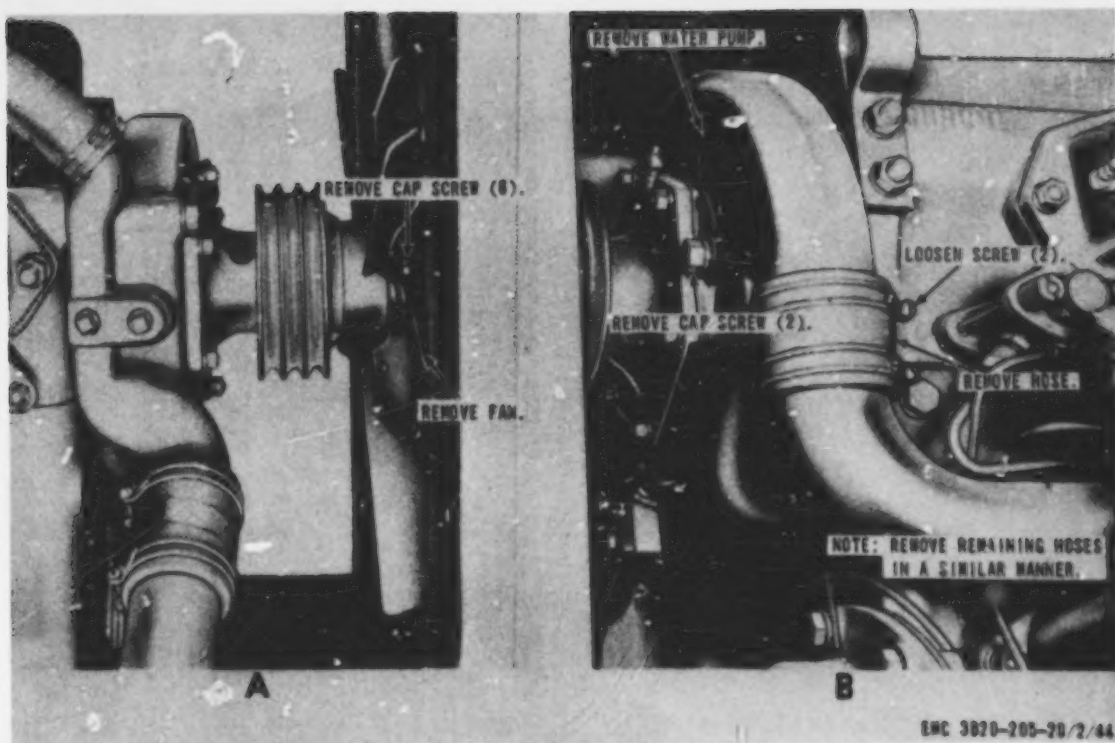


Figure 47. Fan belt and guard, removal and installation.



A—Fan installed view
B—Water pump installed view

Figure 48. Fan and water pump, removal and installation.

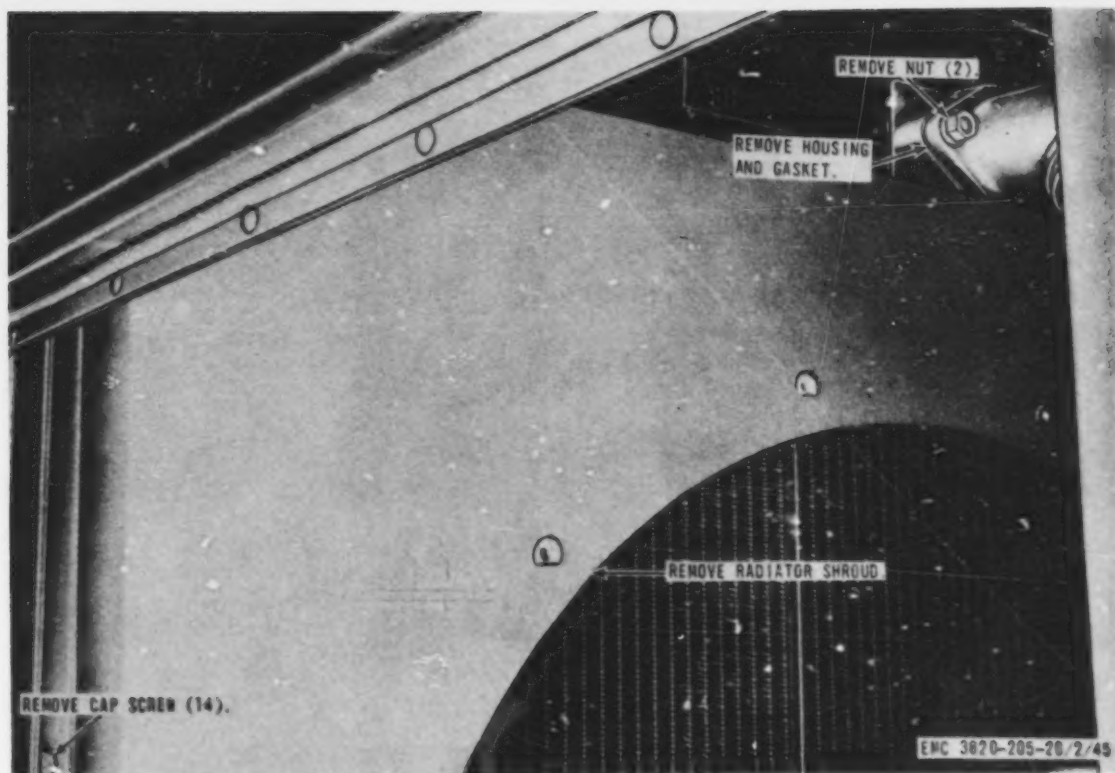


Figure 49. Radiator shroud, removal and installation.

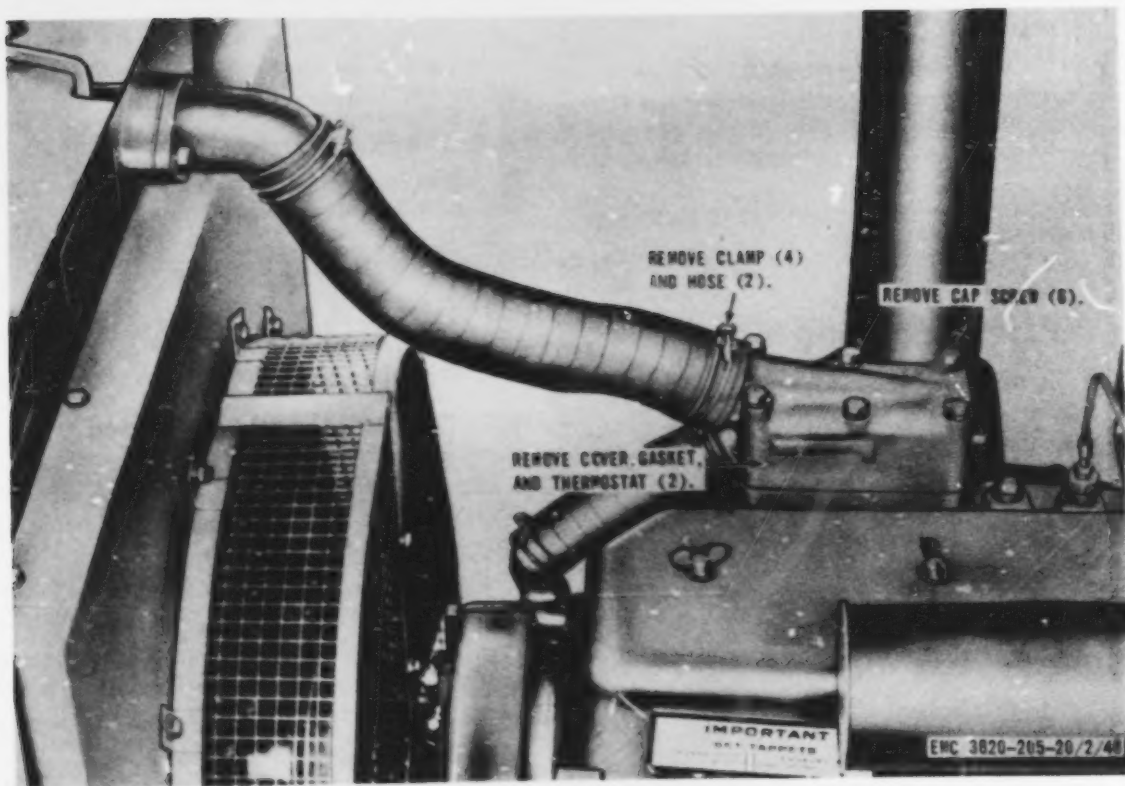


Figure 50. Thermostats and housing, removal and installation.

CHAPTER 5

DOLLY MAINTENANCE INSTRUCTIONS

Section I. DOLLY ELECTRICAL SYSTEM

105. General

The dolly electrical system consists of a connector cable and wiring harness. Current supplied by the towing vehicle is carried by the connector cable to a connector at the front

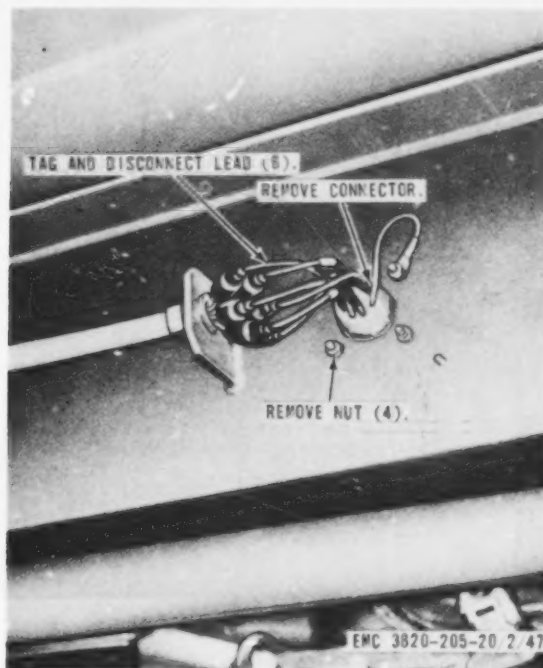


Figure 51. Electrical connector, removal and installation.

of the dolly. A wiring harness runs from the connector to the rear of the dolly to two tail-lights and blackout lights.

106. Electrical Connector

a. *Removal.* Remove the connector from the dolly as instructed on figure 51.

b. *Cleaning and Inspection.* Clean and inspect all parts. Replace defective connector. Repair defective wiring.

c. *Installation.* Install the connector on the dolly in reverse of the instructions on figure 51.

107. Tail and Blackout Lights and Dolly Electrical Leads

a. *Removal.* Remove the tail and blackout lights and the dolly electrical leads from the dolly as instructed on figure 52.

b. *Disassembly.* Disassemble the tail and blackout lights as illustrated on figure 53.

c. *Cleaning, Inspection, and Repair.* Clean and inspect all parts. Replace defective parts.

d. *Lamp and Lens Replacement.* Replace a lamp and lens illustrated on figure 53.

e. *Reassembly.* Reassemble the tail and blackout lights illustrated on figure 53.

f. *Installation.* Install the tail and blackout lights and the dolly electrical leads on the dolly in reverse of the instructions on figure 52.

Section II. DOLLY ASSEMBLY

108. General

The dolly assembly consists of a drawbar, lunette, fifth wheel, wheels, and wheel bearing assemblies. The dolly is used to carry the front end of the trailer frame when the unit is being pulled as a full trailer. The fifth wheel includes a jaw-latch mechanism for connecting or disconnecting the dolly assembly from the trailer.

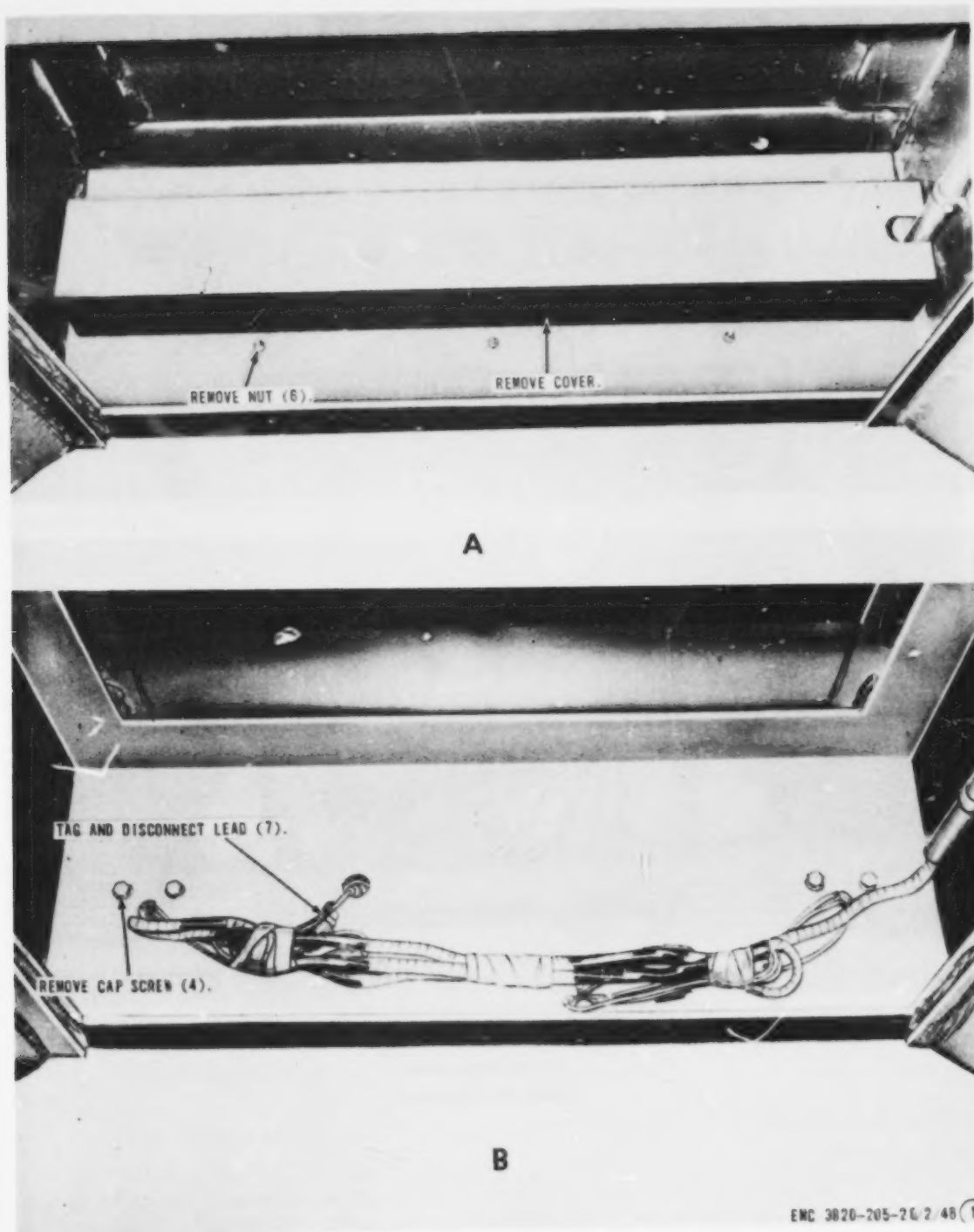
109. Dolly Assembly

a. *Removal.*

(1) *Crab* the roll crusher (TM 5-3820-205-10/1).

(2) Remove the dolly assembly from the unit as instructed on figure 54.

b. *Cleaning and Inspection.* Clean and in-

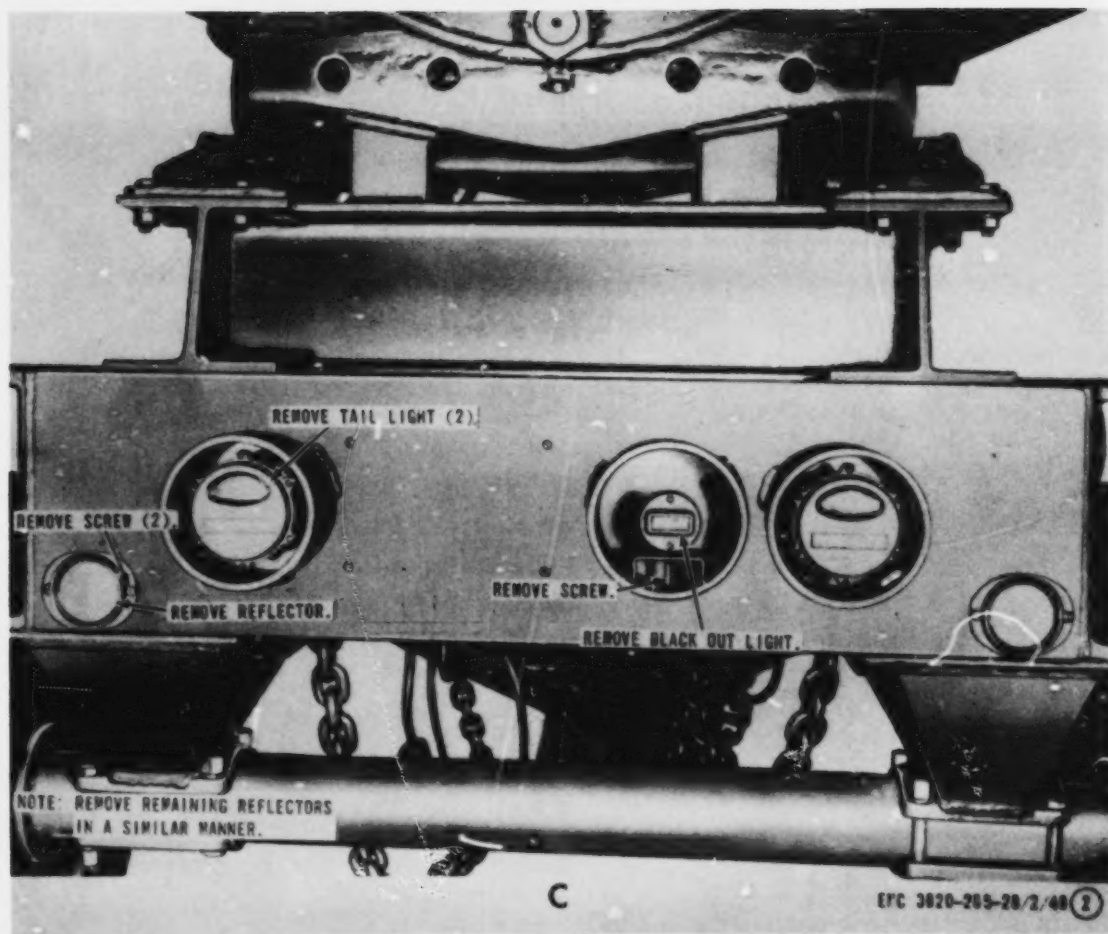


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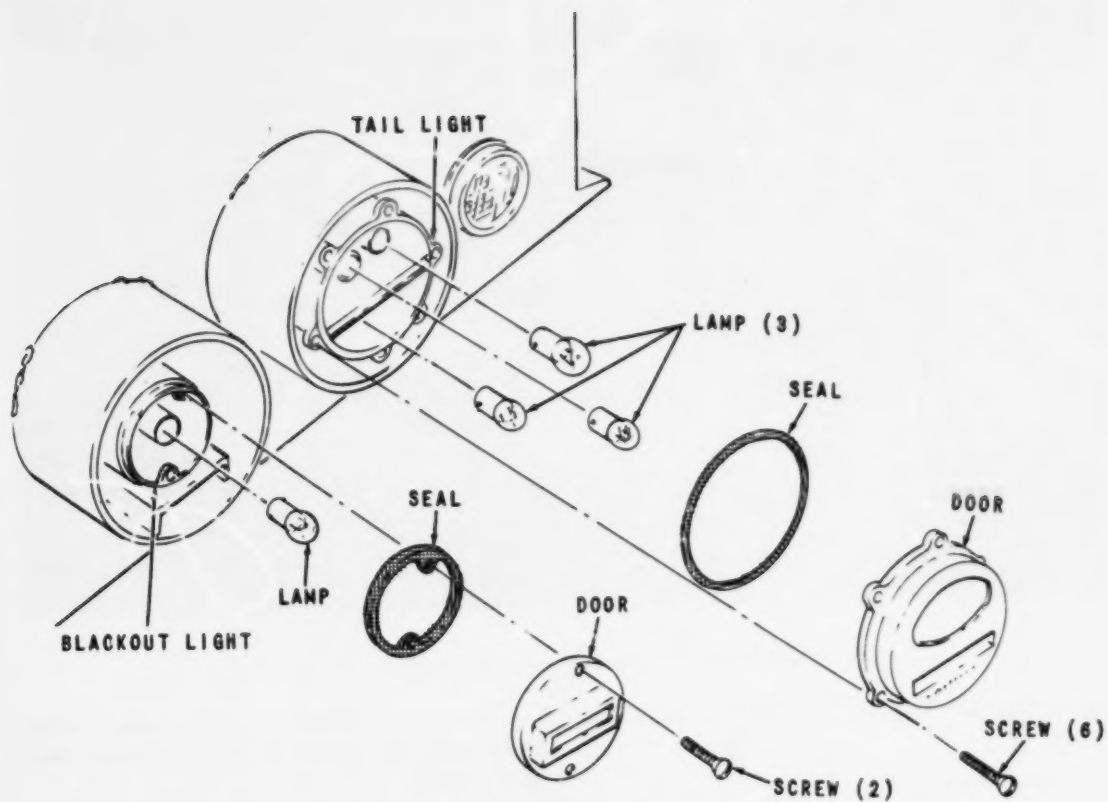
A—Cover installed

B—Dolly lights electrical leads installed

Figure 52. Tail and blackout lights and dolly electrical leads, removal and installation.



C—Dolly lights installed
Figure 52—Continued.



EMC 3820-205-20/2/49

Figure 53. Tail and blackout lights, partially exploded view.

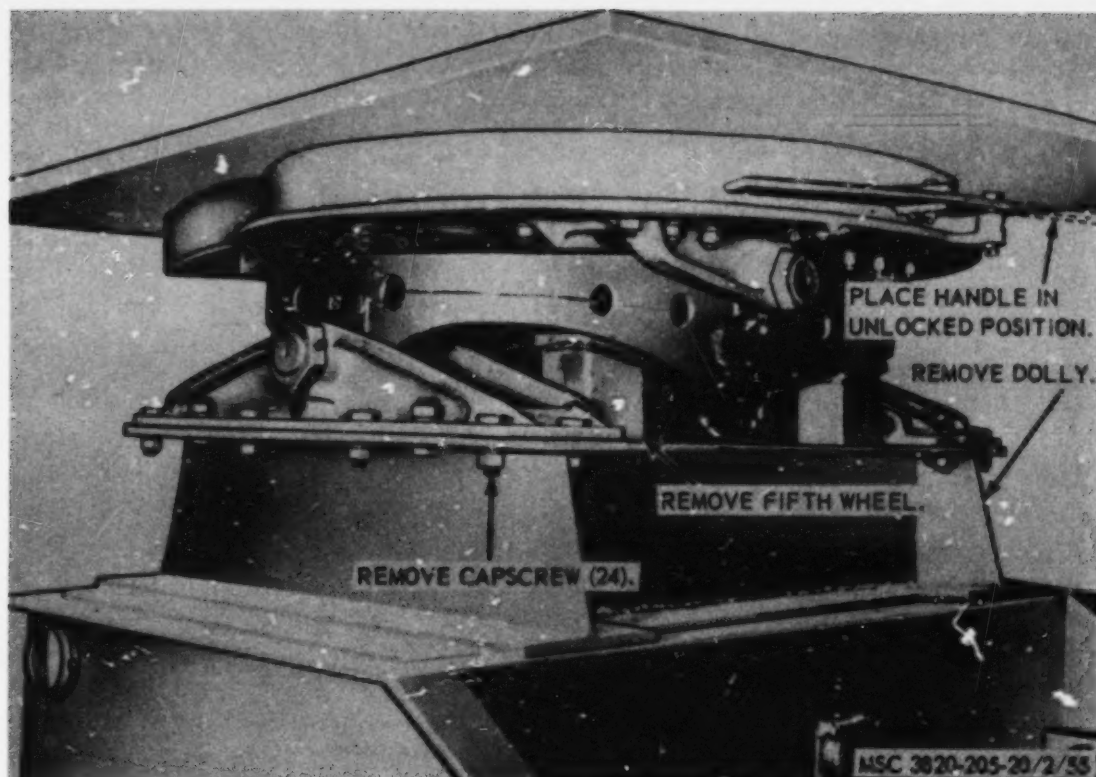


Figure 54. Fifth wheel and dolly assembly, removal and installation.

spect all parts. Replace a defective dolly assembly.

c. Installation.

- (1) Install the dolly assembly on the unit in reverse of the instruction on figure 54.
- (2) Remove the cribbing (TM 5-3820-205-10/1).

Caution: Make certain the dolly is properly attached and secured before towing.

110. Fifth Wheel

a. Removal.

- (1) Remove the dolly assembly (par. 109).
- (2) Remove the fifth wheel as instructed on figure 54.

b. Disassembly. Disassemble the fifth wheel as illustrated on figure 55.

c. Cleaning, Inspection, and Repair. Clean and inspect all parts. Replace or repair parts as necessary.

d. Reassembly. Reassemble the fifth wheel illustrated on figure 55.

e. Installation.

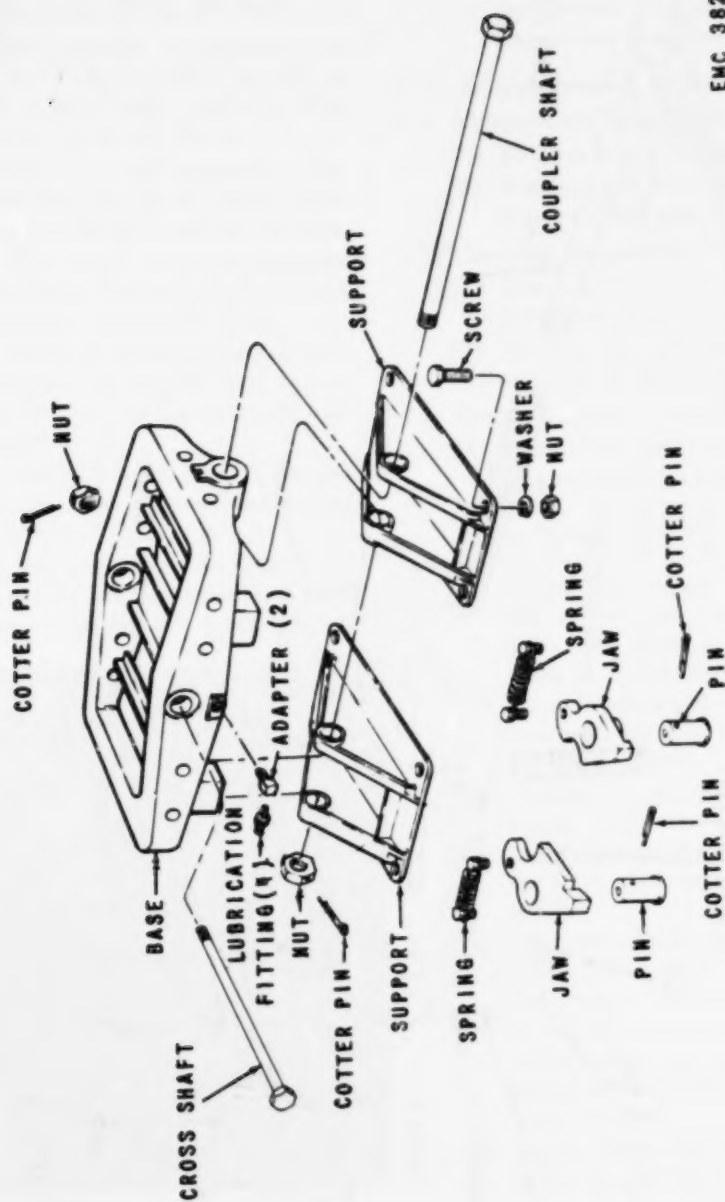
- (1) Install the fifth wheel in reverse of the instructions on figure 54.
- (2) Install the dolly assembly (par. 109).

111. Dolly Wheels and Tires

a. Removal. Remove the dolly wheels from the dolly as instructed on figure 56.

b. Cleaning, Inspection, and Repair.

- (1) Clean studs and nuts with an approved cleaning solvent and dry thoroughly.
- (2) Clean hub, wheel faces, and nut cavities of all paint and preservation before installation.



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Figure 55. Fifth wheel, exploded view.

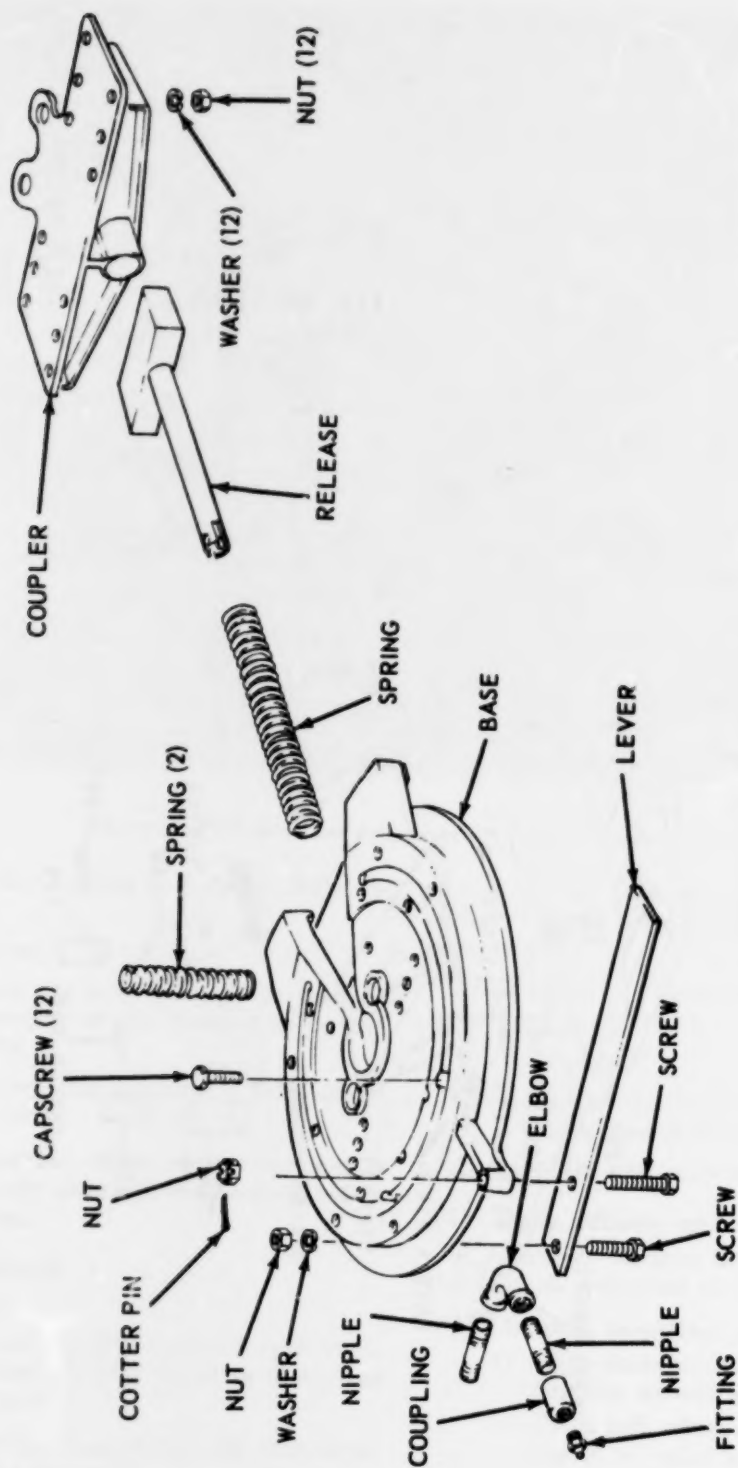


Figure 55—Continued.

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- (3) Clean and inspect wheels and tires. Replace defective wheels and tires. Repair tires and tubes as instructed in TM 9-1870-1.

c. Installation.

- (1) Install inner wheel on hub.
Note. Number the studs 1 to 6.
- (2) Install inner capnuts on studs 1 and 4 and torque to 150 to 200 ft-lb.
- (3) Install the remaining capnuts and torque No. 2, 5, 3, and 6 to 500 to 600 ft-lb in that order.. Retorque Nos. 1 and 4 to 500 to 600 ft-lb.
- (4) Install the outer wheel assembly, making sure that the outer wheel valve stem is opposite the inner valve stem.
- (5) Install two outer nuts on opposite studs (without the washers installed) and torque to 150 to 200 ft-lb.
- (6) Install the four remaining outer nuts (with washers installed) and torque to 500 to 600 ft-lb in the sequence outlined above.
- (7) Remove the two outer nuts (5 above) and reinstall with washers and torque to 500 to 600 ft-lb.
- (8) Remove the dolly from the blocks using a suitable lifting device and road test approximately 10 miles. After

first mile, fifth mile, and tenth mile retorque inner and then outer nuts to 500 to 600 ft-lb. If at the tenth mile torque value has dropped below 400 ft-lb, remove wheels, investigate, and repeat entire procedure.

Caution: A trestle (Motor Vehicle Maintenance, 5 ton) will be used in final torquing operations, taking care that drive extensions are parallel to the ground at all times.

112. Wheel Bearing and Hub Assemblies

a. Removal and Disassembly.

- (1) Remove the dolly wheels (par. 111).
- (2) Remove and disassemble wheel bearings as illustrated on figure 57.

b. Cleaning, Inspection, and Repair.

- (1) Clean and inspect all parts. Replace defective parts as necessary.
- (2) Service the wheel bearings as instructed in paragraph 16.

c. Reassembly and Installation.

- (1) Install the bearings and hub on the axle as illustrated on figure 57.

Note. Install hubs with right-hand studs on right side of the vehicle and hubs with left-hand studs on left side of the vehicle.

- (2) Install the wheel bearing adjusting nut. Screw the nut against the bearing as the wheel is revolved. Be sure there is sufficient clearance between the brakeshoe and drum so brakeshoe drag will not interfere with the bearing adjustment.
- (3) Tighten the adjusting nut to 50 ft-lb torque while the wheel is being rotated. Rotate the wheel in both directions to position the bearings correctly.
- (4) Back-off adjusting nut 1/6 to 1/4 turn, and install the adjusting nut lockwasher. If the holes in lockwasher do not fit dowel protruding from adjusting nut, the washer may be removed and turned over, which changes hole locations.
- (5) Install the outer locknut and torque to 250 to 400 ft-lb.

Note. The use of an impact wrench is discouraged; however, if used, the final torquing

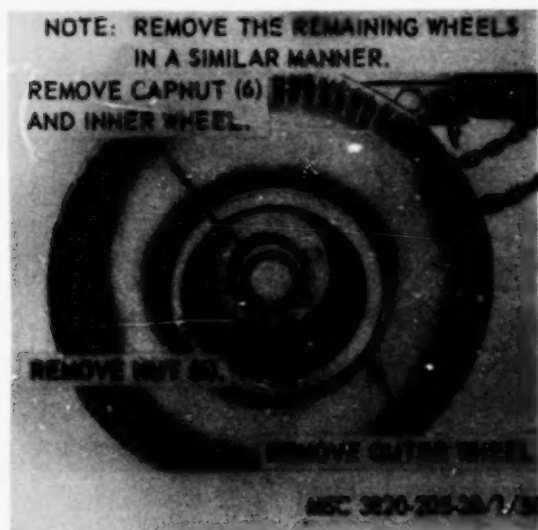


Figure 56. Dolly wheels, removal and installation.

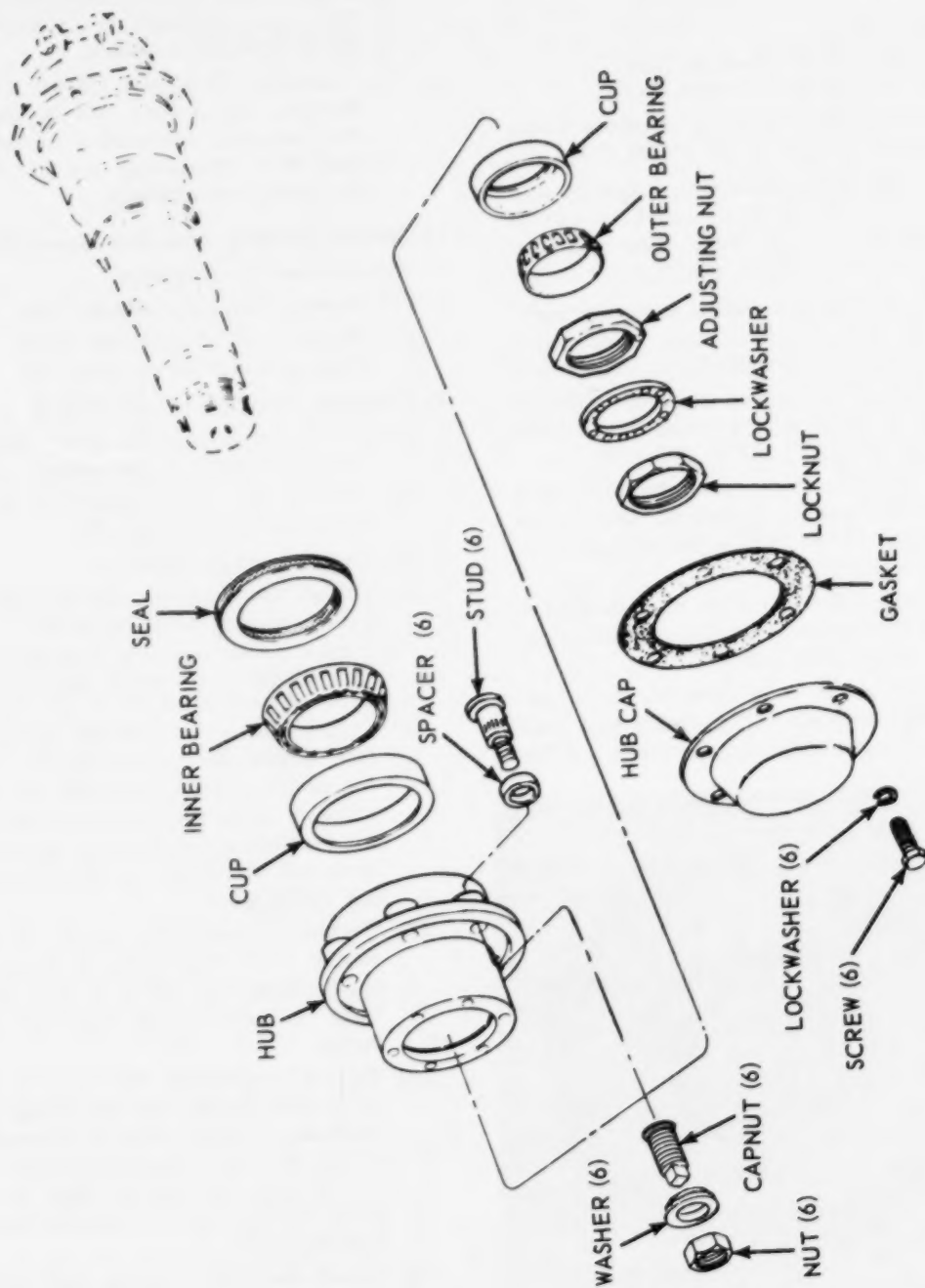


Figure 57. Wheel bearings and hub assembly, exploded view.

will be accomplished by hand using a smooth downward effort.

- (6) Install the dolly wheel (par. 111).

113. Air Hoses and Fittings

a. *Removal.* Remove the air hoses and fittings from the dolly as instructed on figure 58.

Note. On units of equipment within serial number range 6590 through 6629 the hoses and cable are suspended by a flexo-stick assembly.

b. *Cleaning and Inspection.* Clean and inspect all parts. Replace defective parts as necessary.

c. *Installation.* Install the air hoses and fittings on the dolly in reverse of the instructions on figure 58.

114. Drawbar

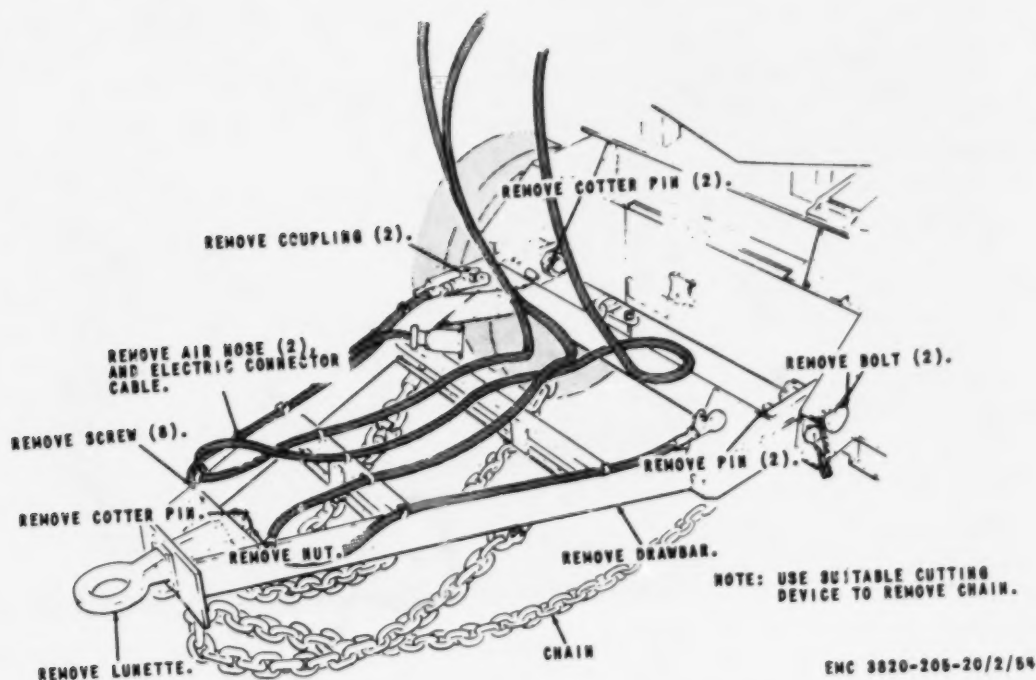
a. Removal.

- (1) Remove flexo-stick assembly from the drawbar (TM 5-3820-205-10/1).
- (2) Remove the drawbar from the dolly as instructed on figure 58.

b. *Cleaning and Inspection.* Clean and inspect all parts. Replace defective drawbar as necessary.

c. Installation.

- (1) Install the drawbar assembly on the dolly in reverse of the instructions on figure 58.
- (2) Install the flexo-stick assembly on the drawbar (TM 5-3820-205-10/1).



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Figure 58. Drawbar, air hose, fittings, safety chain, and lunette, removal and installation.

115. Lunette

a. Removal. Remove the lunette from the drawbar as instructed on figure 58.

b. Cleaning and Inspection. Clean and inspect all parts. Replace defective lunette as necessary.

c. Installation. Install the lunette on the drawbar in reverse of the instructions on figure 58.

116. Reflectors

a. Removal. Remove the reflectors from the unit as instructed on figure 52.

b. Cleaning and Inspection. Clean and in-

spect all parts. Replace defective reflectors as necessary.

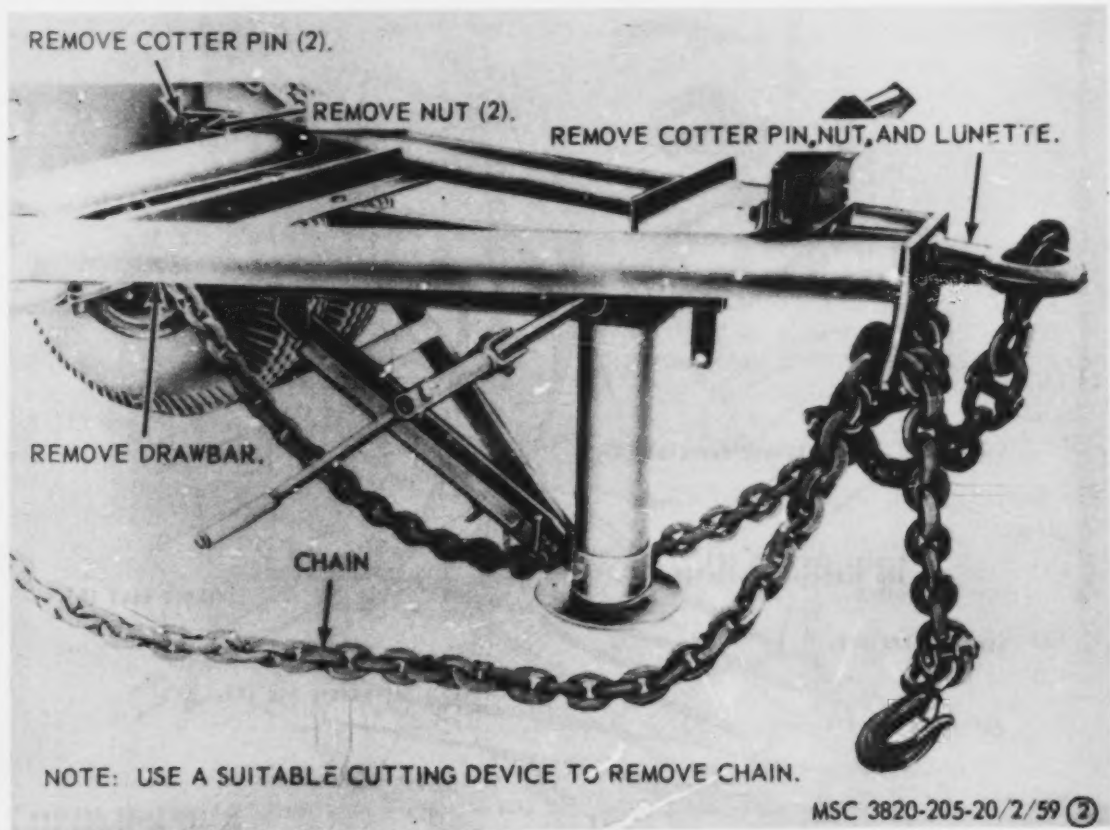
c. Installation. Install the reflectors on the unit in reverse of the instructions on figure 52.

117. Safety Chains

a. Removal. Remove the safety chains from the dolly as instructed on figure 58.

b. Cleaning, Inspection, and Repair. Clean and inspect all parts. Repair by welding or use repair links or suitable heavy clevises.

c. Installation. Install the safety chains on the dolly in reverse of the instructions on figure 58.



(Serial numbers 6590 through 6629)

Figure 58—Continued.

CHAPTER 6

ROLL CRUSHER MAINTENANCE INSTRUCTIONS

Section I. DRIVE BELTS

118. General

The drive belts are used to transmit power from the engine to the crusher rolls, and from electrical motors to gear reducers, for the conveyor belts, feeder pan, and elevator. The screen vibrator is actuated by an electrical motor and direct drive belts.

119. Electric Motor Drive Belts

a. Removal.

- (1) Remove the outer belt guard (TM 5-3820-205-10/1).
- (2) Remove the electrical motor drive belts from the electric motor as instructed on figure 59.

b. *Cleaning and Inspection.* Clean and inspect all parts. Replace worn or defective drive belts as necessary.

c. Installation.

- (1) Install the electrical motor drive belts on the electric motor in reverse of the instructions on figure 59.
- (2) Adjust the electrical motor drive belts (TM 5-3820-205-10/1).
- (3) Install the outer belt guard (TM 5-3820-205-10/1).

120. Crusher Main Drive Belts Adjustment

Adjust the crusher roll main drive belts as instructed on figure 60.

Section II. SHEAVE, HUB, AND GUARD BASE

121. General

The sheave and hub are attached to the electrical motor shaft and gear reducer shaft.

122. Sheave, Hub, and Guard Base

a. Removal.

- (1) Remove the outer belt guard (TM 5-3820-205-10/1).
- (2) Remove the belts (par. 119).
- (3) Remove the sheave, hub, and guard base from the unit as instructed on figure 61.

b. *Cleaning and Inspection.* Clean and inspect all parts. Replace damaged sheave or hub as necessary.

c. Installation.

- (1) Install the guard base, hub, and sheave in the unit in reverse of the instructions on figure 61.
- (2) Install the belts (par. 119).
- (3) Adjust the belts (TM 5-3820-205-10/1).
- (4) Install the outer belt guard (TM 5-3820-205-10/1).

Section III. CRUSHER ELECTRICAL SYSTEM

123. General

The roll crusher electrical system is comprised of the feeder jumper and reel assembly, a main power cable to connect the crusher to an outside source of power, connector receptacle assemblies, five electric motors to operate the

crusher components, a main control panel, operator's control box, and necessary wiring, switches, and hardware to complete the circuits.

124. Feeder Jumper Reel and Bracket Assembly

a. *Removal.* Remove the feeder jumper reel

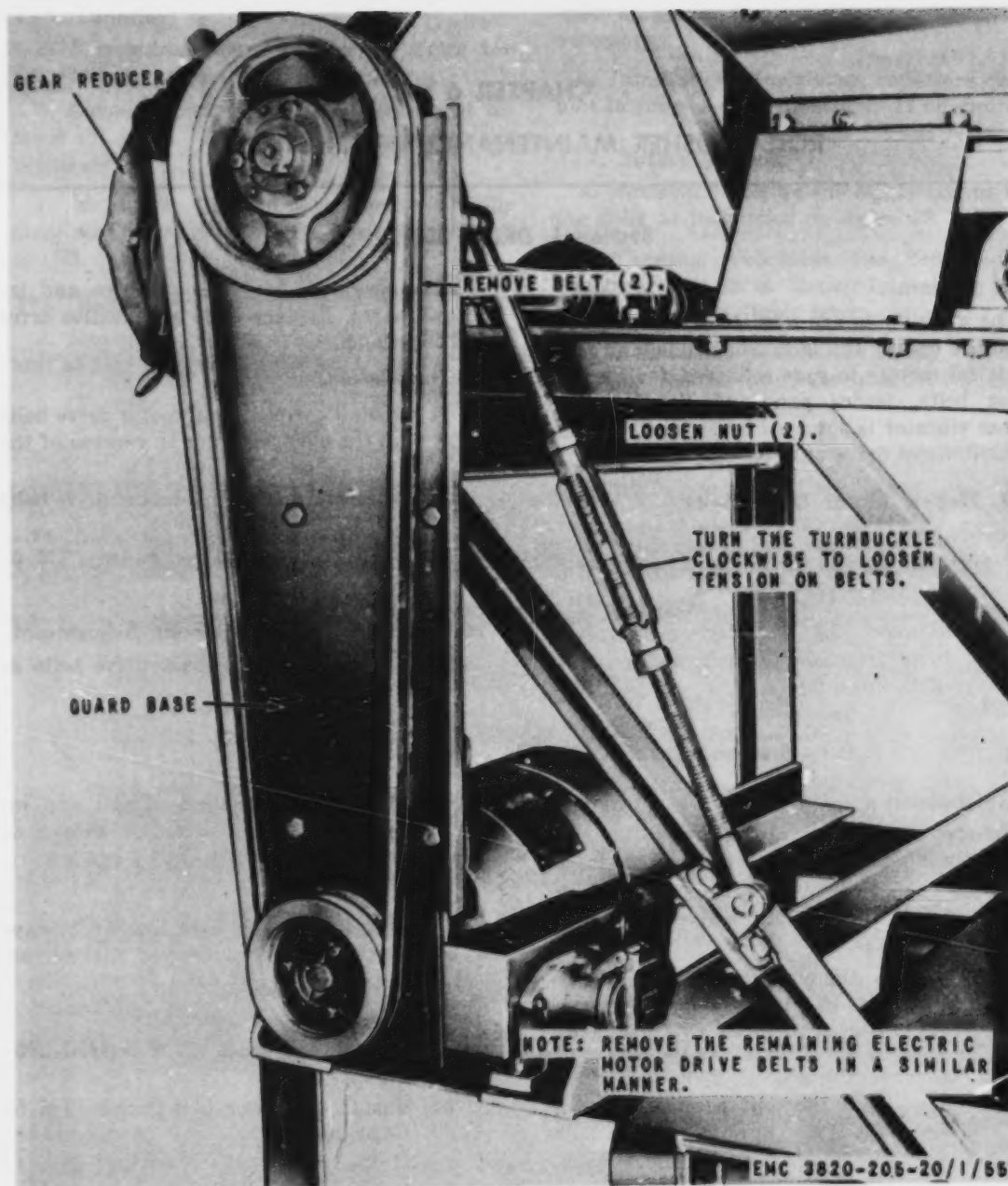


Figure 59. Electrical motor drive belts, removal and installation.

and bracket from the unit as instructed on figure 62.

b. Disassembly. Disassemble the feeder jumper reel and bracket assembly as illustrated on figure 63.

c. Cleaning, Inspection, and Repair. Clean and inspect all parts. Repair or replace a defective or damaged part as necessary.

d. Reassembly. Reassemble the feeder jumper reel and bracket as illustrated on figure 63.

e. Installation. Install the feeder jumper reel and bracket assembly in reverse of the instructions on figure 62.

125. Main Power Cable Reel and Bracket Assembly

a. Removal. Remove the main power cable

reel and bracket assembly from the unit as instructed on figure 64.

b. Disassembly. Disassemble the main power cable reel and bracket as illustrated on figure 65.

c. Cleaning, Inspection, and Repair. Clean and inspect all parts. Repair or replace a defective or damaged part as necessary.

d. Reassembly. Reassemble the main power cable reel and bracket assembly illustrated on figure 65.

e. Installation. Install the main power cable reel and bracket assembly on the unit in reverse of the instructions on figure 64.

126. Pushbutton Switches

a. Removal. Remove the pushbutton switches from the control box as instructed on figure 66.

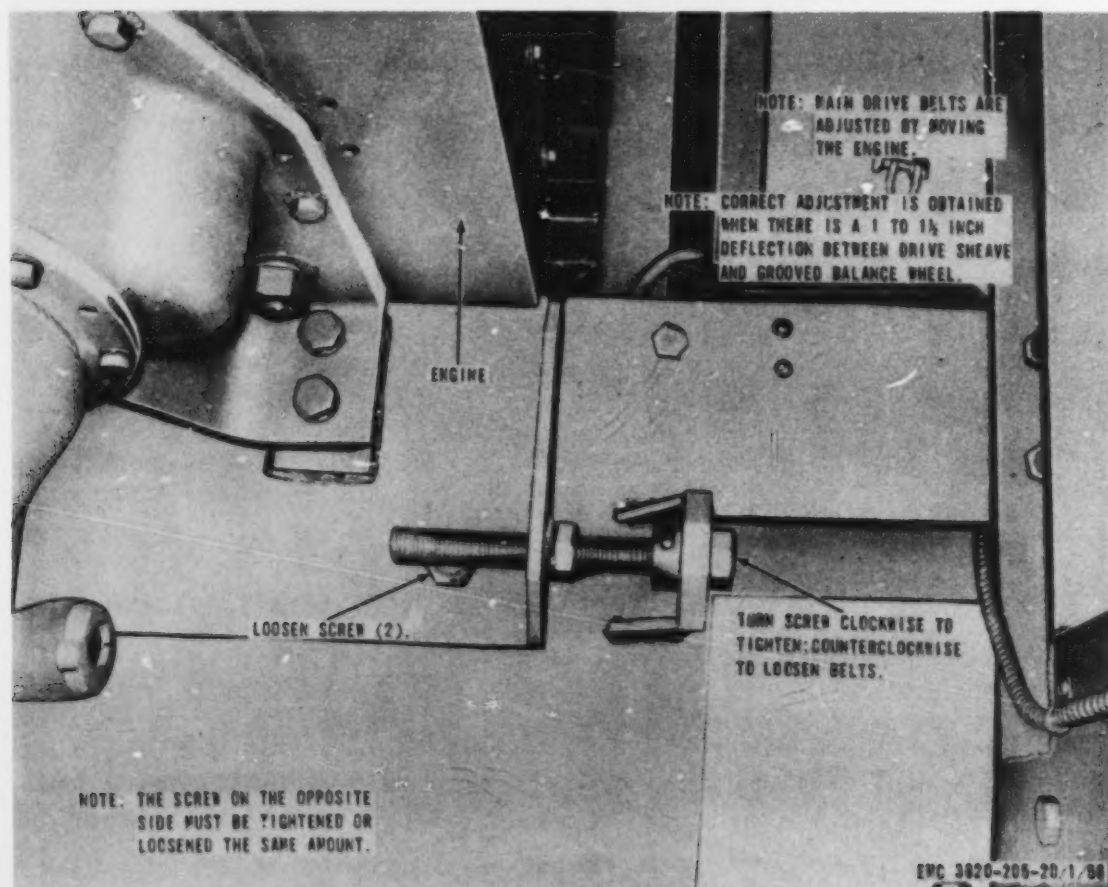


Figure 60. Main drive belt, adjustment.

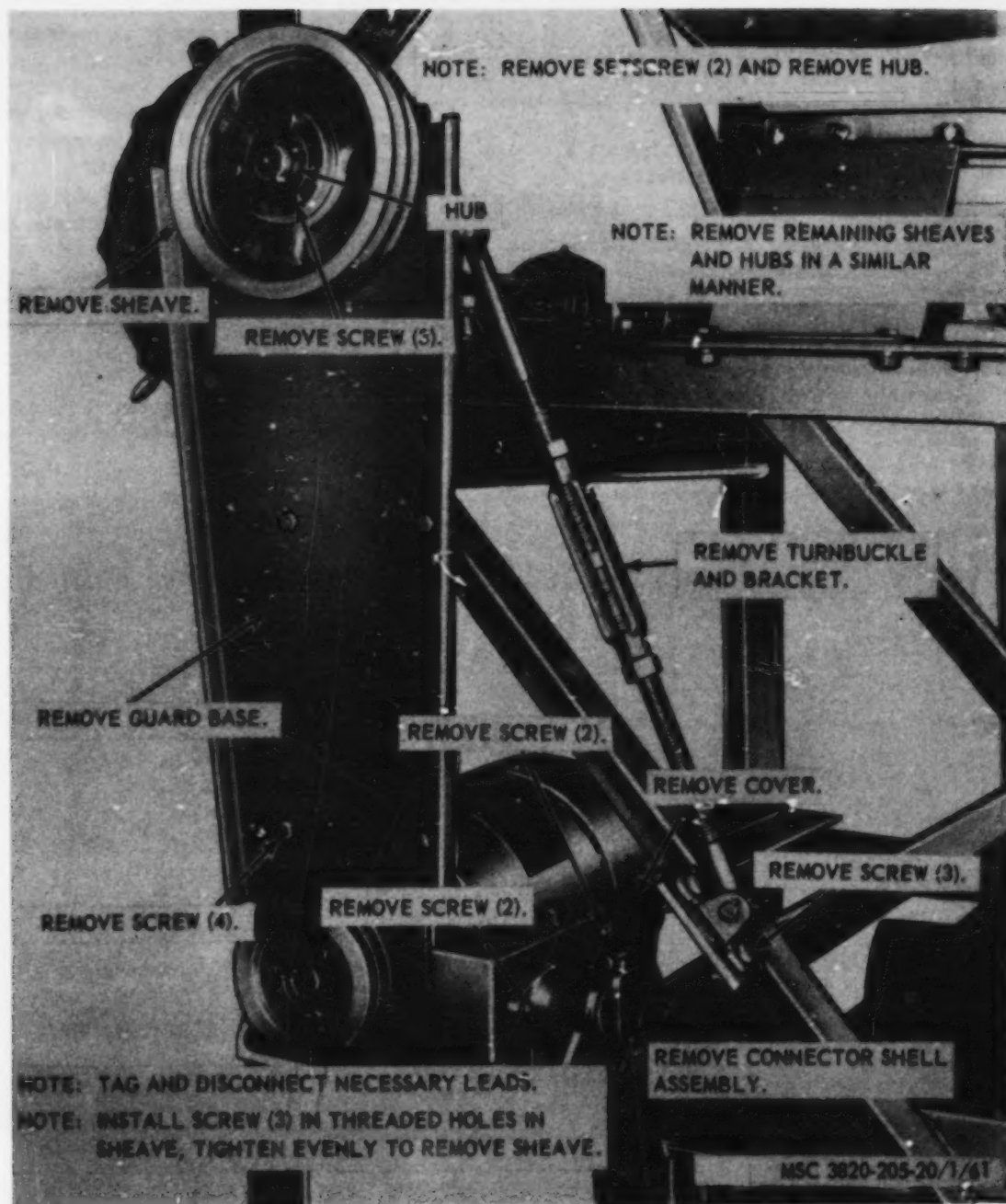


Figure 61. Turnbuckle, sheave, hub, connector, and guard base, removal and installation.

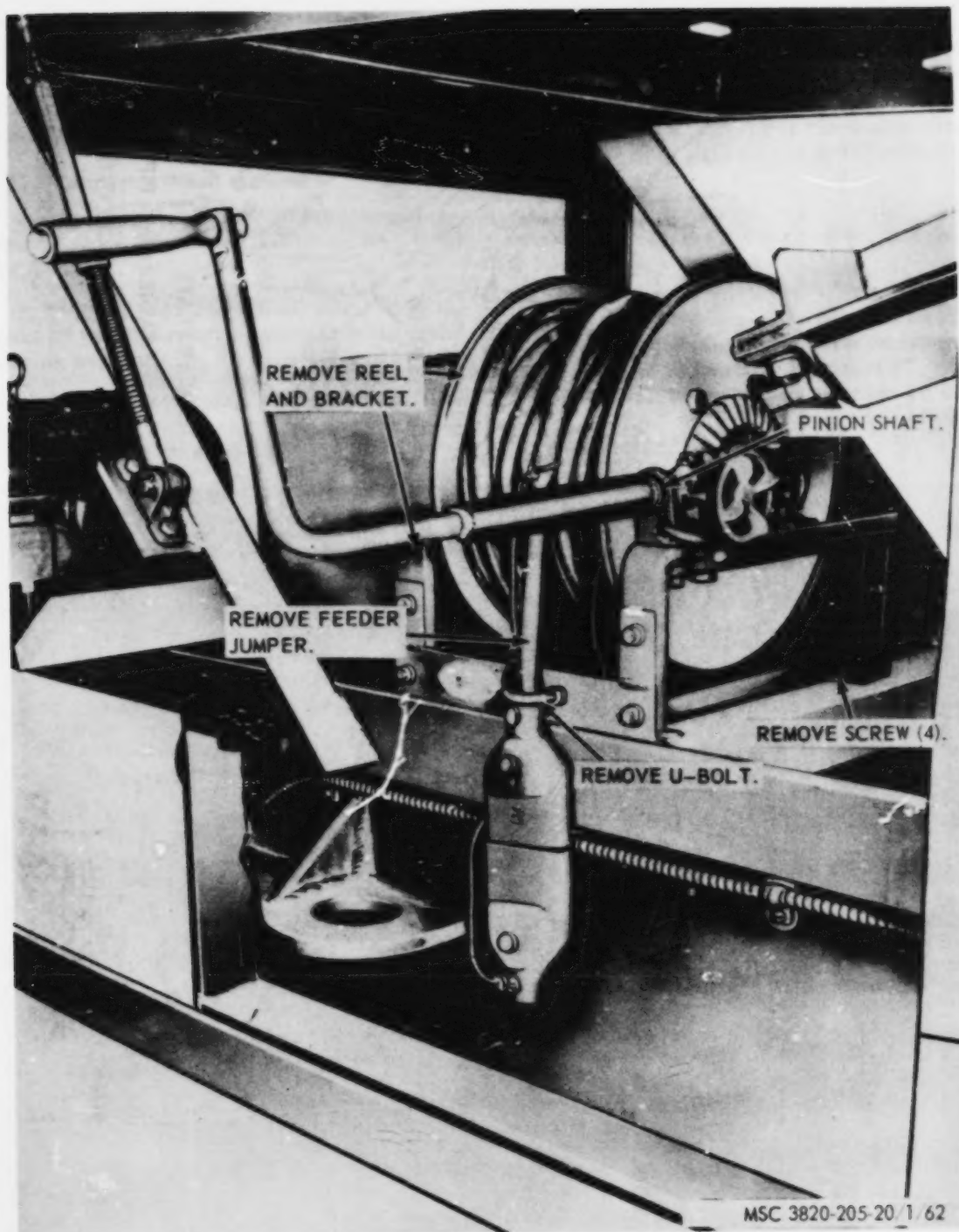


Figure 62. Feeder jumper reel and bracket assembly, removal and installation.

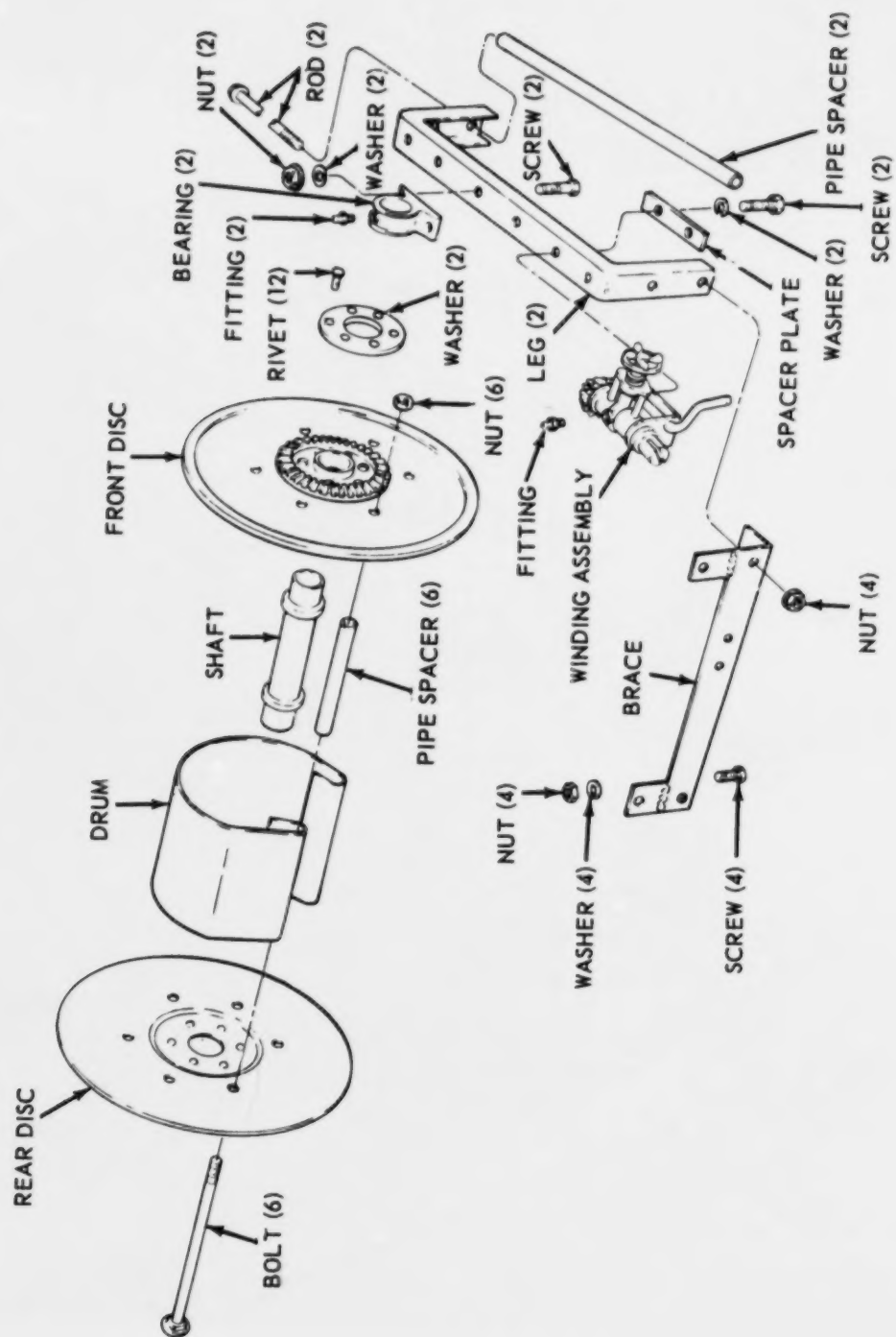


Figure 68. Feeder jumper reel and bracket, exploded view.

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b. Cleaning and Inspection. Clean and inspect all parts. Replace a defective or damaged part as necessary.

c. Installation. Install the pushbutton switches on the control box in reverse of the instructions on figure 66.

127. Connector Shell Assembly

a. Removal. Remove the connector shell assembly from the electric motor as instructed on figure 61.

b. Cleaning and Inspection. Clean and inspect all parts. Replace a defective or damaged part as necessary.

c. Installation. Install the connector shell assembly on the electric motor in reverse of the instructions on figure 61.

128. Control Mechanism

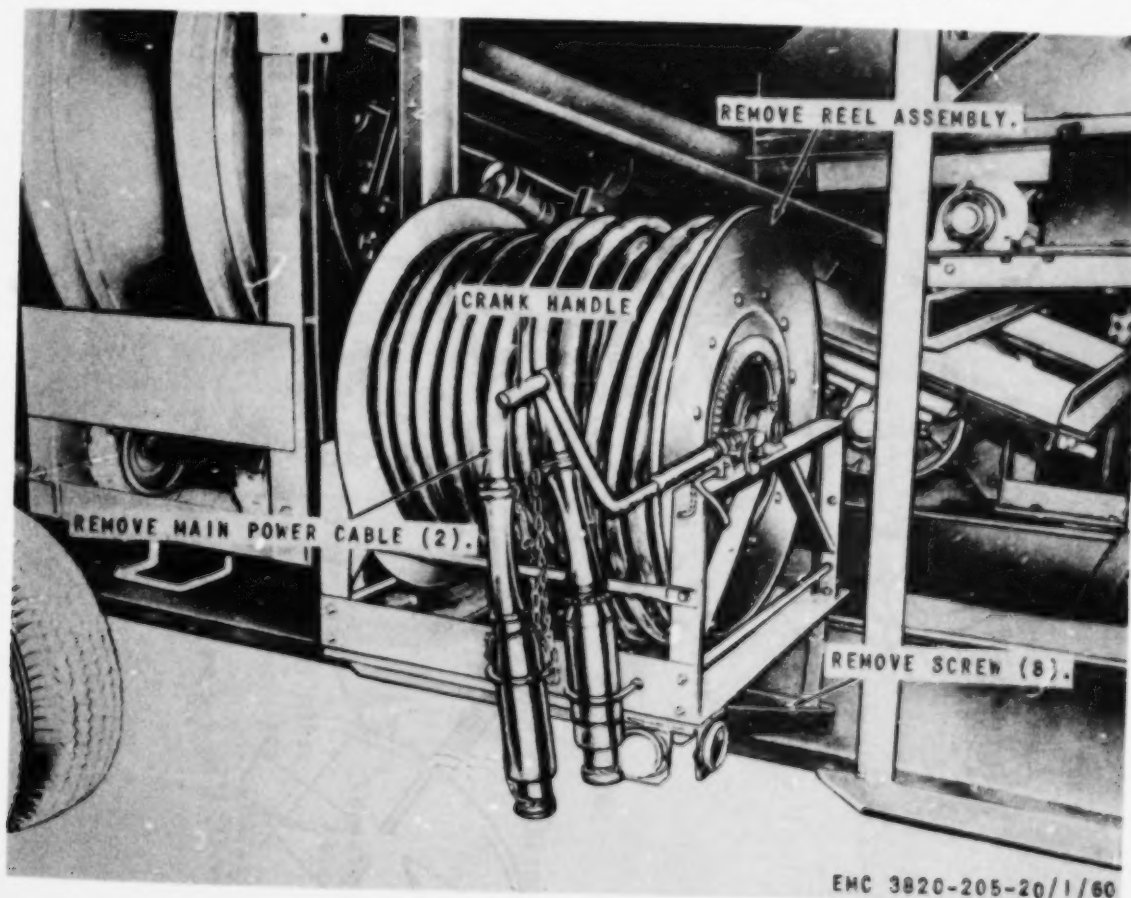
a. Removal.

- (1) Remove the control mechanism handle from the control panel door as instructed on figure 67.
- (2) Remove the control mechanism from the control panel box as instructed on figure 68.

b. Cleaning, Inspection, and Repair. Clean and inspect. Replace or repair worn, damaged, or defective parts as necessary.

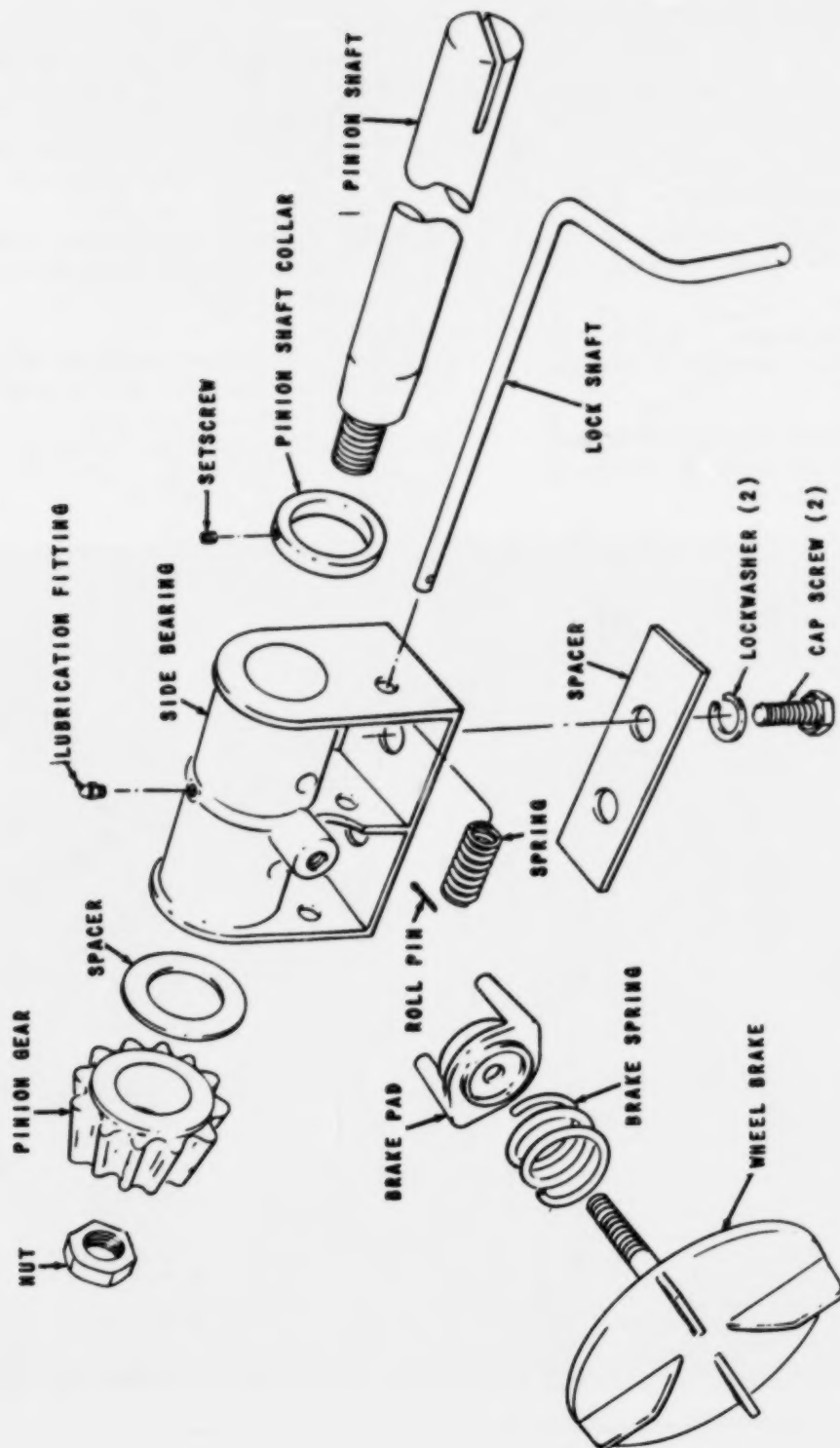
c. Installation.

- (1) Install the control mechanism handle on the control panel door in reverse of the instructions on figure 67.
- (2) Install the control mechanism on the control panel box in reverse of the instructions on figure 68.



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Figure 64. Main power cable reel and bracket assembly, removal and installation.



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Figure 65. Main power cable reel and bracket, exploded view.

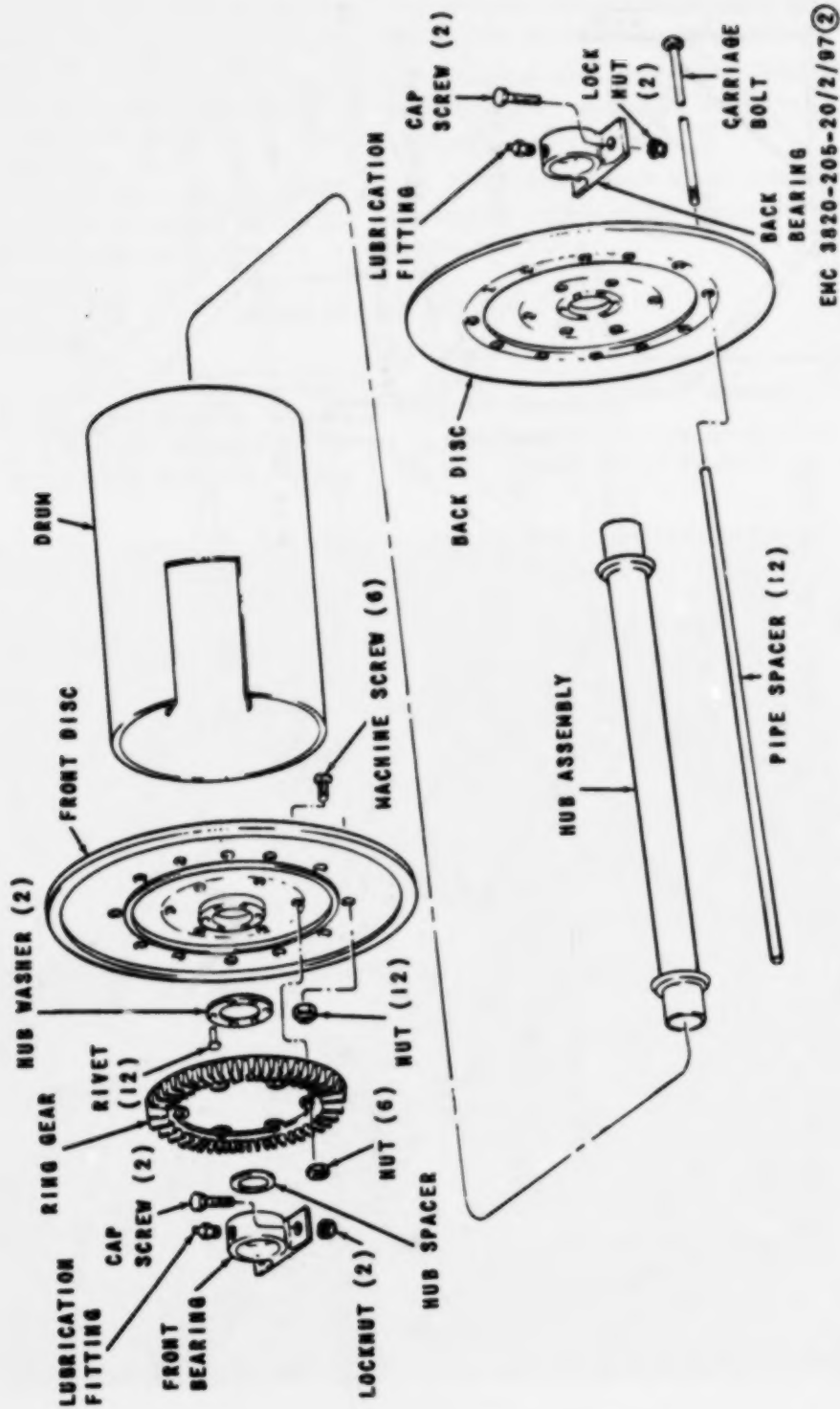
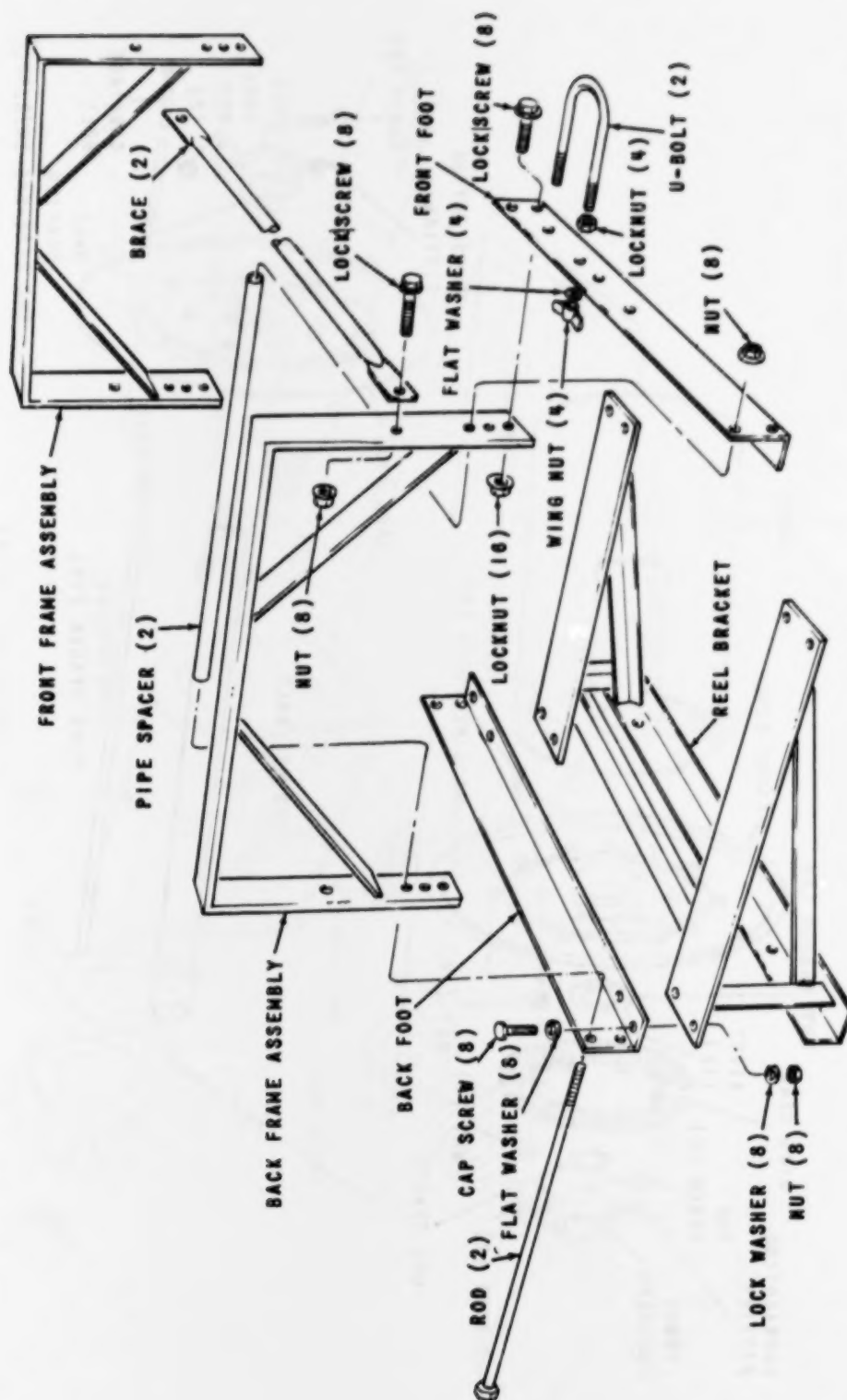


Figure 65—Continued.



EMC 3820-205-20/2/97③

Figure 65—Continued.

129. Magnetic Starter and Heater Assembly

a. *Removal.* Remove the magnetic starter and heater assembly from the control box as instructed on figure 68.

b. *Cleaning and Inspection.* Clean and inspect all parts. Replace a defective or damaged part as necessary.

c. *Installation.* Install the magnetic starter and heater assembly on the control box in reverse of the instructions on figure 68.

130. Electric Motors

a. *Removal.* Remove the electric motors from the unit as instructed on figure 69.

b. *Cleaning and Inspection.* Clean and inspect all parts. Replace a defective or damaged part as necessary.

c. *Installation.* Install the electric motors on the unit in reverse of the instructions on figure 69.

Section IV. AIR SYSTEM

131. General

The air system consists of the hose, lines, valve, filters, chambers, and air tank. The air system is used to actuate the brakes when the roll crusher is being towed from one location

to another.

132. Air Chambers

a. *Removal.* Remove the air chambers from the unit as instructed on figure 70.

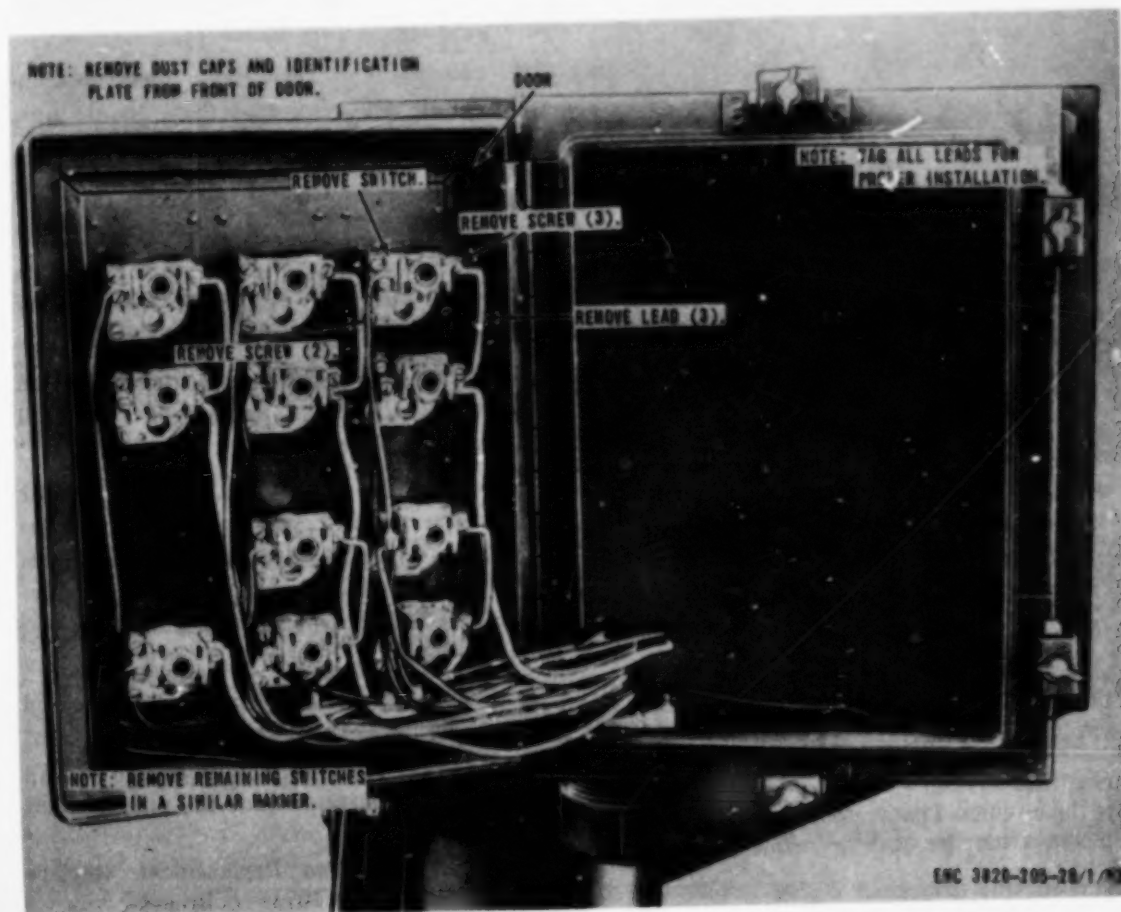


Figure 66. Pushbutton switches, removal and installation.

b. Cleaning and Inspection. Clean and inspect all parts. Replace a defective air chamber.

c. Installation. Install the air chamber on the unit in reverse of the instructions on figure 70.

133. Relay Valve

a. Removal. Remove the relay valve from the unit as instructed on figure 71.

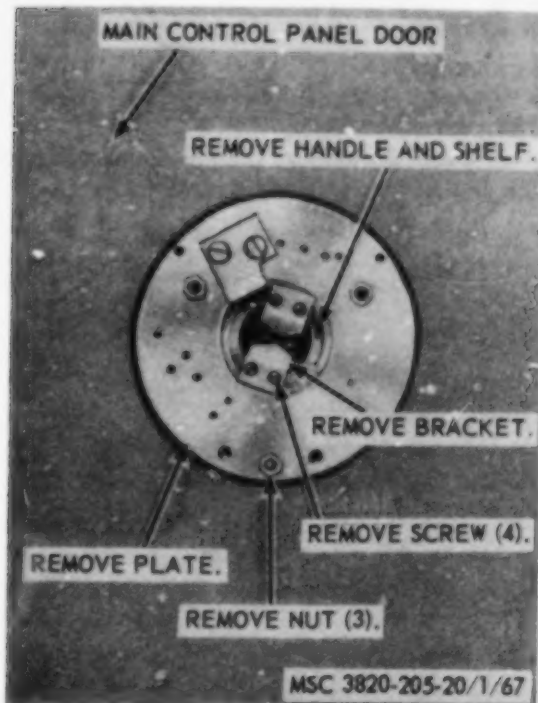


Figure 67. Control mechanism handle, removal and installation.

b. Cleaning and Inspection. Clean and inspect the relay valve. Replace a defective relay valve.

c. Installation. Install the relay valve on the unit in reverse of the instructions on figure 71.

134. Air Filter

a. Removal. Remove the air filter from the unit as instructed on figure 72.

b. Cleaning and Inspection. Clean and inspect the air filters. Replace a defective filter.

c. Installation. Install the air filter on the unit in reverse of the instructions on figure 72.

135. Air Tank

a. Removal. Remove the air tank from the unit as instructed on figure 73.

b. Cleaning and Inspection. Clean and inspect the air tank. Replace a defective air tank.

c. Installation. Install the air tank on the unit in reverse of the instructions on figure 73.

136. Coupling, Hoses, and Lines

a. Removal. Open left side engine side doors and remove air line hoses, lines and coupling from the unit as instructed on figure 74.

b. Cleaning, Inspection, and Repair. Clean and inspect all parts. Replace or repair all damaged parts as necessary.

c. Installation. Install the coupling and air hose on the unit in reverse of the instructions on figure 74, and close the engine side doors.

Section V. TRAILER LIGHTS AND WIRING

137. General

The 24-volt crusher trailer lighting system consists of tail lights, blackout lights, clearance marker lights, and necessary wiring to complete the circuits. This system derives its source of power from the crusher prime mover.

138. Tail and Blackout Lights

a. Removal. Remove the trailer tail and blackout lights (par. 107).

b. Disassembly. Disassemble the tail and blackout lights (par. 107).

c. Cleaning, Inspection, and Repair. Clean and inspect all parts. Repair tail and blackout lights (par. 107).

d. Lamp and Lens Replacement. Replace lamp and lens (par. 107).

e. Reassembly. Reassemble the tail and blackout lights (par. 107).

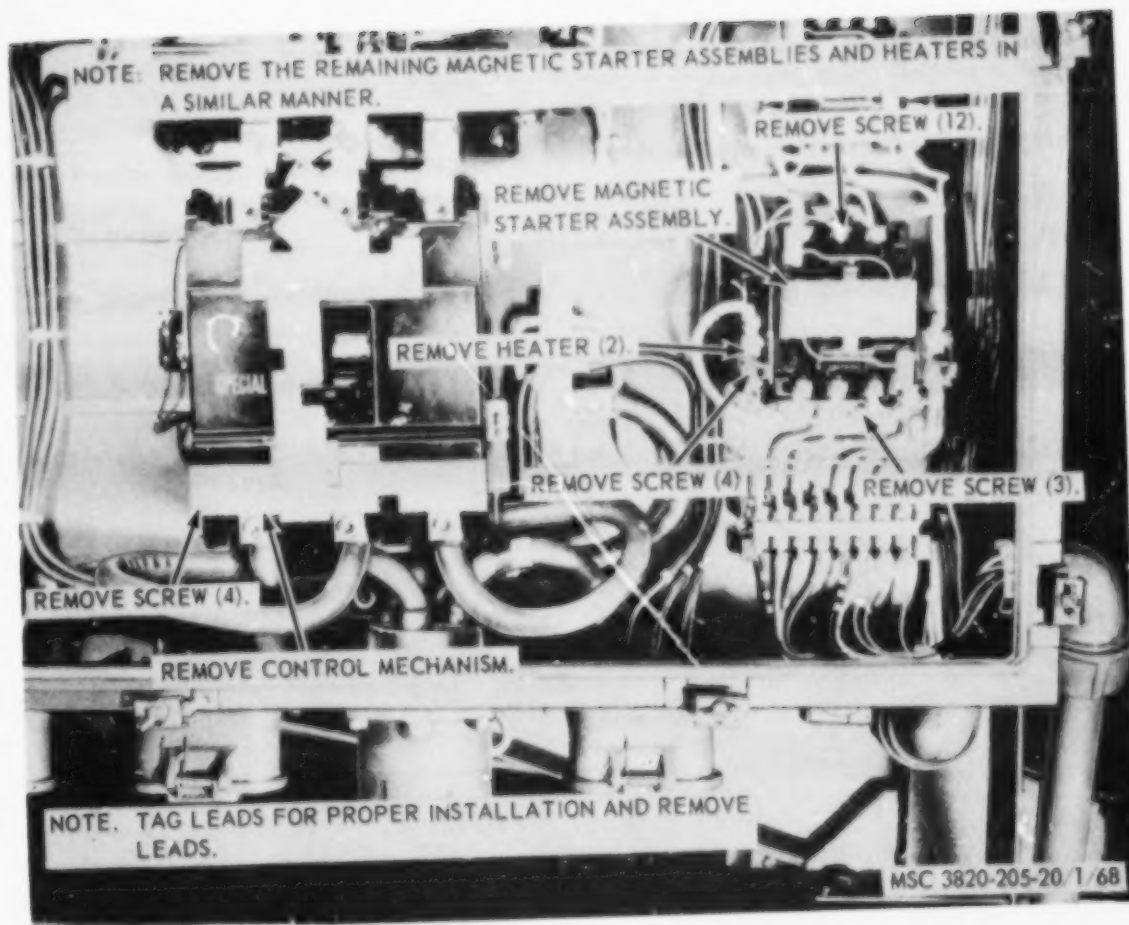


Figure 68. Control mechanism, magnetic starter, and heater, removal and installation.

f. *Installation.* Install the tail and blackout lights (par. 107).

139. Clearance Marker Lights

a. *Removal.* Remove the clearance marker lights from the unit as instructed on figure 75.

b. *Disassembly.* Disassemble the clearance marker lights as illustrated on figure 76.

c. *Cleaning, Inspection, and Repair.* Clean and inspect all parts for breaks, cracks, loose

or missing hardware, corrosion, and frayed or damaged insulation. Repair or replace a damaged part as necessary.

d. *Lamp and Lens Replacement.* Replace the lamps and lenses as illustrated on figure 76.

e. *Reassembly.* Reassemble the clearance marker lights illustrated on figure 76.

f. *Installation.* Install the clearance marker lights on the unit in reverse of the instructions on figure 75.

Section VI. RECIPROCATING FEEDER ASSEMBLY

140. General

The reciprocating feeder assembly controls the flow of material to the roll crusher. The

assembly consists of a feeder grizzly, upper hopper, feeder hopper, and reciprocating feeder plate. The feeder plate moves back and forth

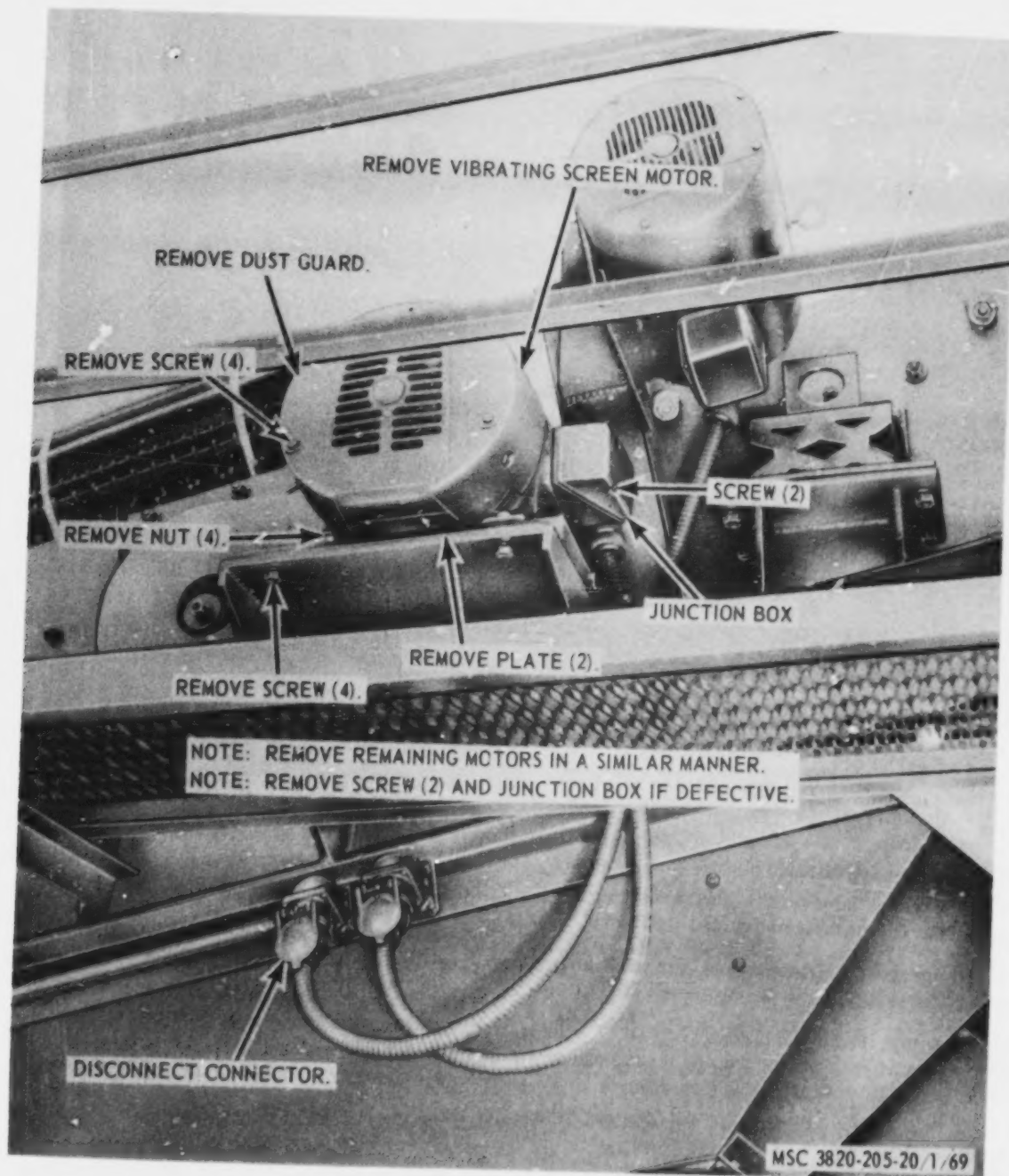


Figure 69. Vibrator screen drive motor, removal and installation.

in a reciprocating movement that is actuated by the crank-arm drive. The flow of material from the feeder to the crusher is controlled by an adjustable gate.

141. Feeder Grizzly and Upper Hopper

a. Removal. Remove the feeder grizzly and upper hopper from the unit as instructed on figure 77.

b. Cleaning and Inspection. Clean and inspect all parts. Replace a damaged or defective part as necessary.

c. Installation. Install the feeder grizzly on the unit in reverse of the instructions on figure 77.

142. Relief Chute, Extension, and Gate

a. Removal. Remove the relief chute, extension, and gate from the unit as instructed on figure 78.

b. Cleaning, Inspection, and Repair. Clean and inspect all parts. Repair or replace a defective or damaged gate. Replace a damaged part as necessary.

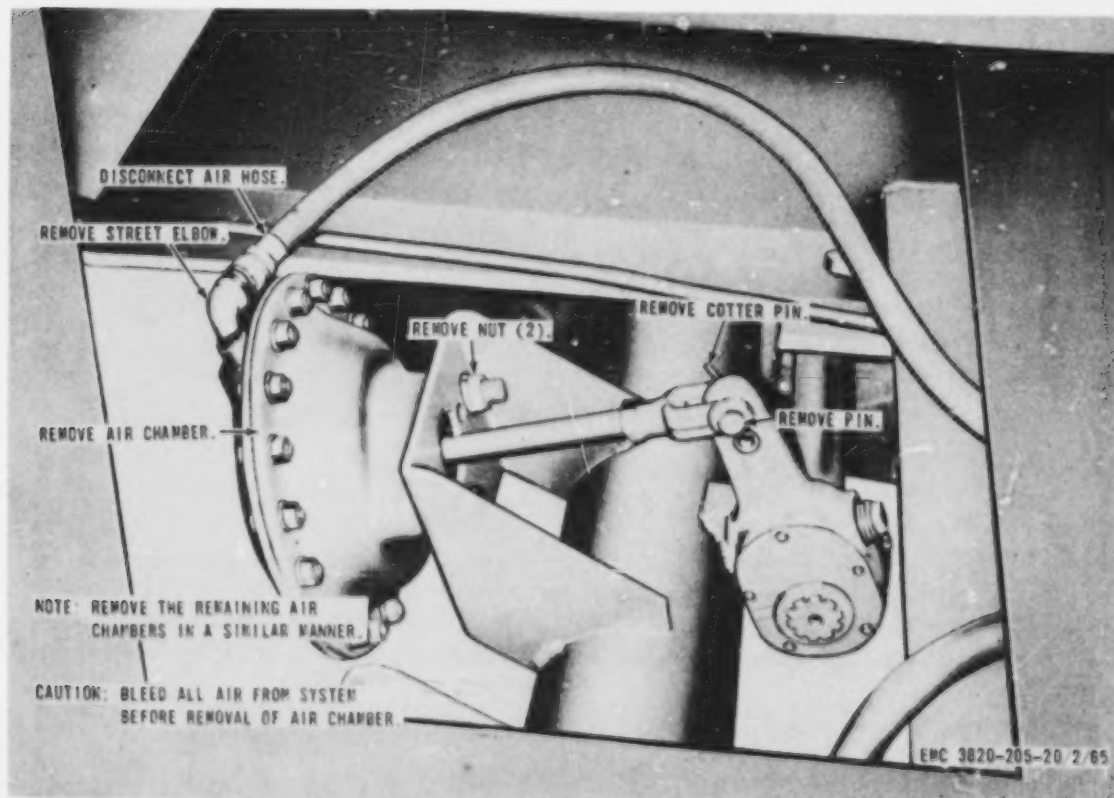
c. Installation. Install the relief chute, extension, and gate on the unit in reverse of the instructions on figure 78.

143. Reciprocating Feeder Hopper Wear Plates and Liners

a. Removal.

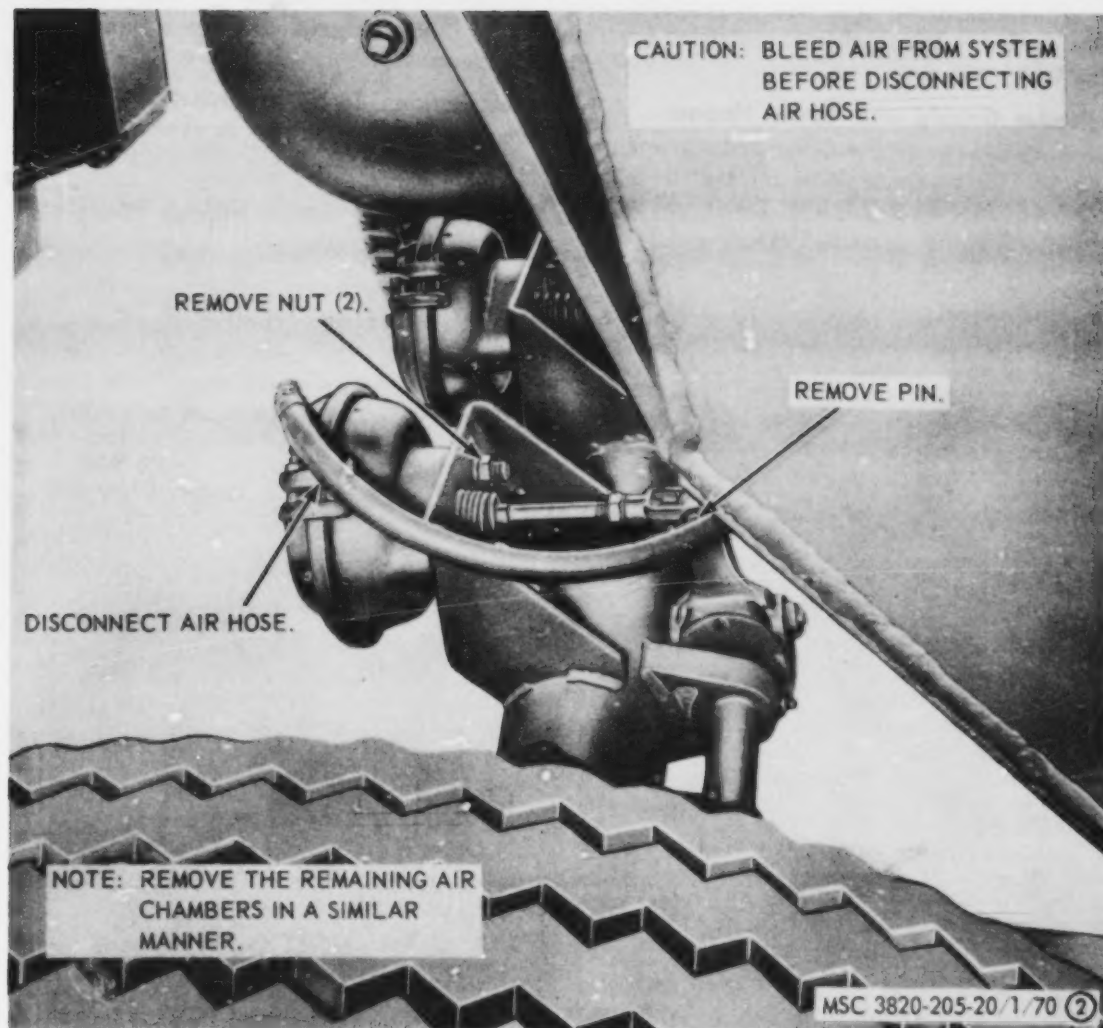
- (1) Remove feeder grizzly (par. 141).
- (2) Remove the reciprocating feeder hopper wear plates and liners from the unit as instructed on figure 79.

b. Cleaning and Inspection. Clean and inspect all parts. Replace a defective or damaged part as necessary.



(Serial number range 6550 through 6587)

Figure 70. Air chamber, removal and installation.



(Serial number range 6590 through 6629)

Figure 70—Continued.

c. Installation.

- (1) Install the reciprocating feeder hopper wear plates and liners on the unit in reverse of the instructions on figure 79.
- (2) Install the feeder grizzly (par. 141).

144. Reciprocating Feeder Gate

a. Removal. Remove the reciprocating feeder gate from the unit as instructed on figure 80.

b. Cleaning, Inspection, and Repair. Clean

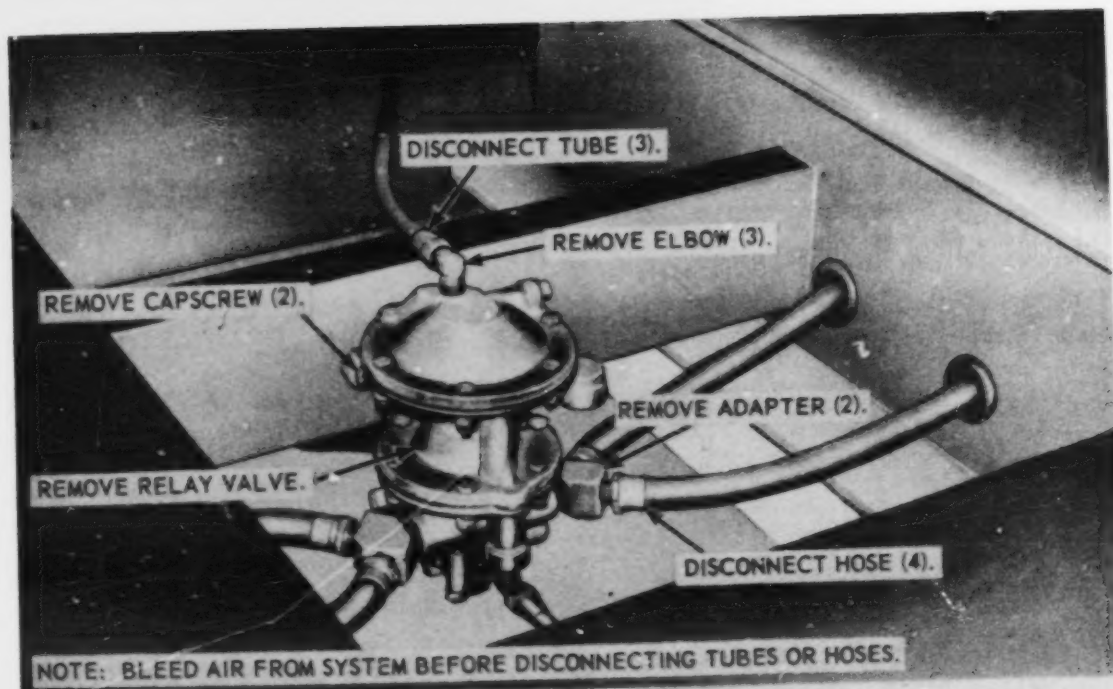
and inspect all parts. Repair or replace a defective part as necessary.

c. Installation. Install the reciprocating feeder gate on the unit in reverse of the instructions on figure 80.

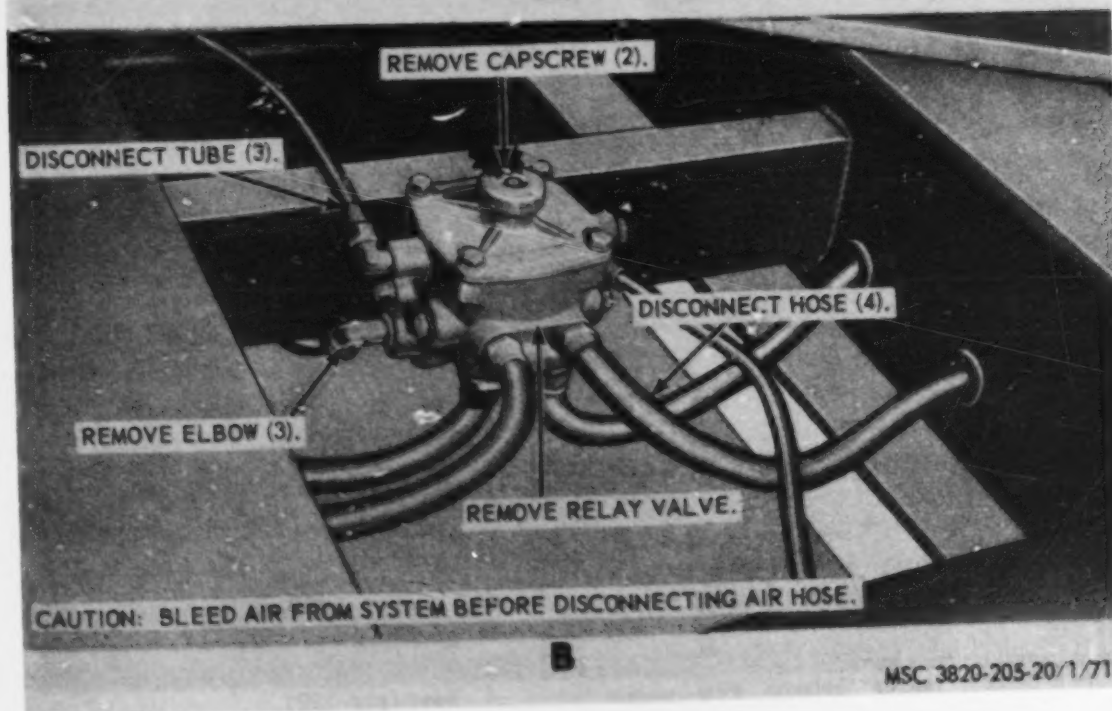
145. Feeder Hopper Assembly

a. Removal.

- (1) Remove the relief chute and extension (par. 142).
- (2) Remove feeder grizzly and upper hopper (par. 141).



A



B

MSC 3820-205-20/1/71

A—On units of equipment within serial number range 6550 through 6587 only
 B—On units of equipment within serial number range 6590 through 6629 only

Figure 71. Relay valve, removal and installation.

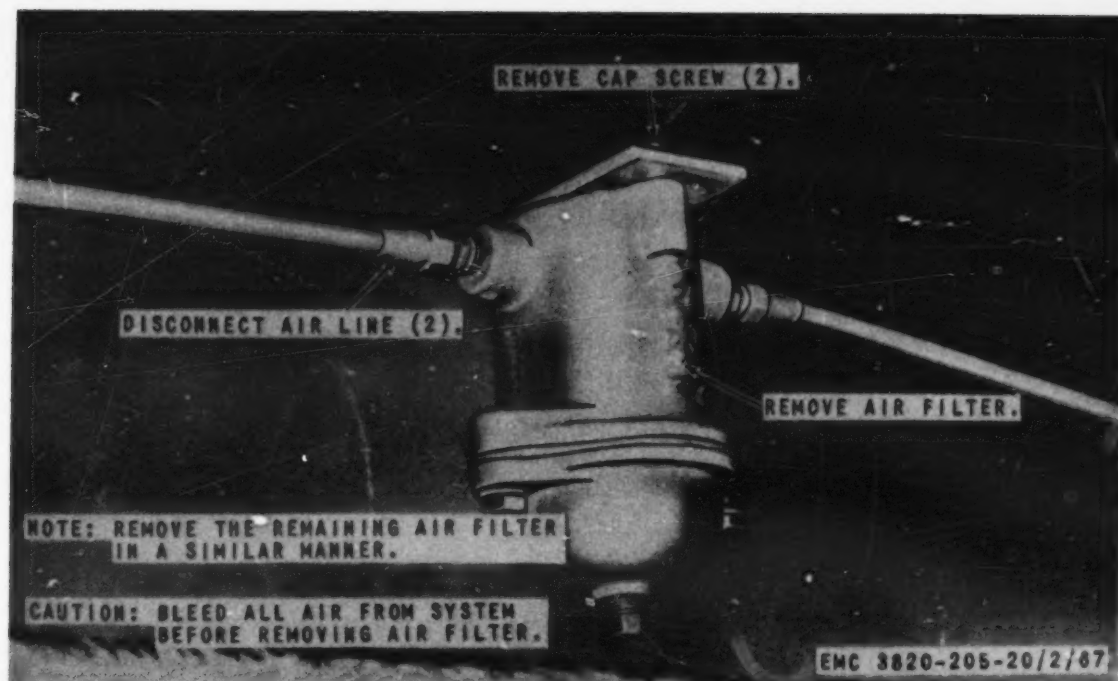


Figure 72. Air filter, removal and installation.

- (3) Remove the feeder hopper wear plates and liners (par. 143).
- (4) Remove reciprocating feeder gate (par. 144).
- (5) Remove the feeder hopper assembly from the unit as instructed on figure 81.

b. Cleaning and Inspection. Clean and inspect all parts. Replace a defective or damaged part as necessary.

c. Installation.

- (1) Install the feeder hopper assembly on the unit in reverse of the instructions on figure 81.
- (2) Install the reciprocating feeder gate (par. 144).
- (3) Install the feeder hopper wear plates and liners (par. 143).
- (4) Install feeder grizzly and upper hopper (par. 141).
- (5) Install the relief chute and extension (par. 142).

146. Gear Reducer Assembly

a. Removal.

- (1) Remove the outer belt guard (TM 5-3820-205-10/1).
- (2) Remove the drive belt (par. 119).
- (3) Remove sheave, hub, and guard base (par. 122).
- (4) Remove the gear reducer assembly from the unit as instructed on figure 82.

b. Cleaning and Inspection. Clean and inspect all parts. Replace a damaged or defective part as necessary.

c. Installation.

- (1) Install the gear reducer assembly on the unit in reverse of the instructions on figure 82.
- (2) Install the sheave, hub, and guard base (par. 122).
- (3) Install the drive belt (par. 119).
- (4) Install the outer belt guard (TM 5-3820-205-10/1).

147. Pan Feeder Crankshaft

a. Removal.

- (2) Remove the gear reducer assembly (par. 146).
- (1) Remove the gear reducer assembly from the unit as instructed on figure 83.

b. *Cleaning and Inspection.* Clean and inspect all parts. Replace a defective or damaged part as necessary.

c. Installation.

- (1) Install the pan feeder crankshaft on the unit in reverse of the instructions on figure 83.
- (2) Install the gear reducer (par. 146).

148. Pan Feeder and Rollers

a. Removal.

- (1) Remove the pan feeder crankshaft (par. 147).
- (2) Remove the feeder pan and rollers from the unit as instructed on figure 83.

b. *Cleaning and Inspection.* Clean and inspect all parts. Replace a damaged or defective part as necessary.

c. Installation.

- (1) Install the feeder pan and roller on the unit in reverse of the instructions on figure 83.
- (2) Install the pan feeder crankshaft (par. 147).

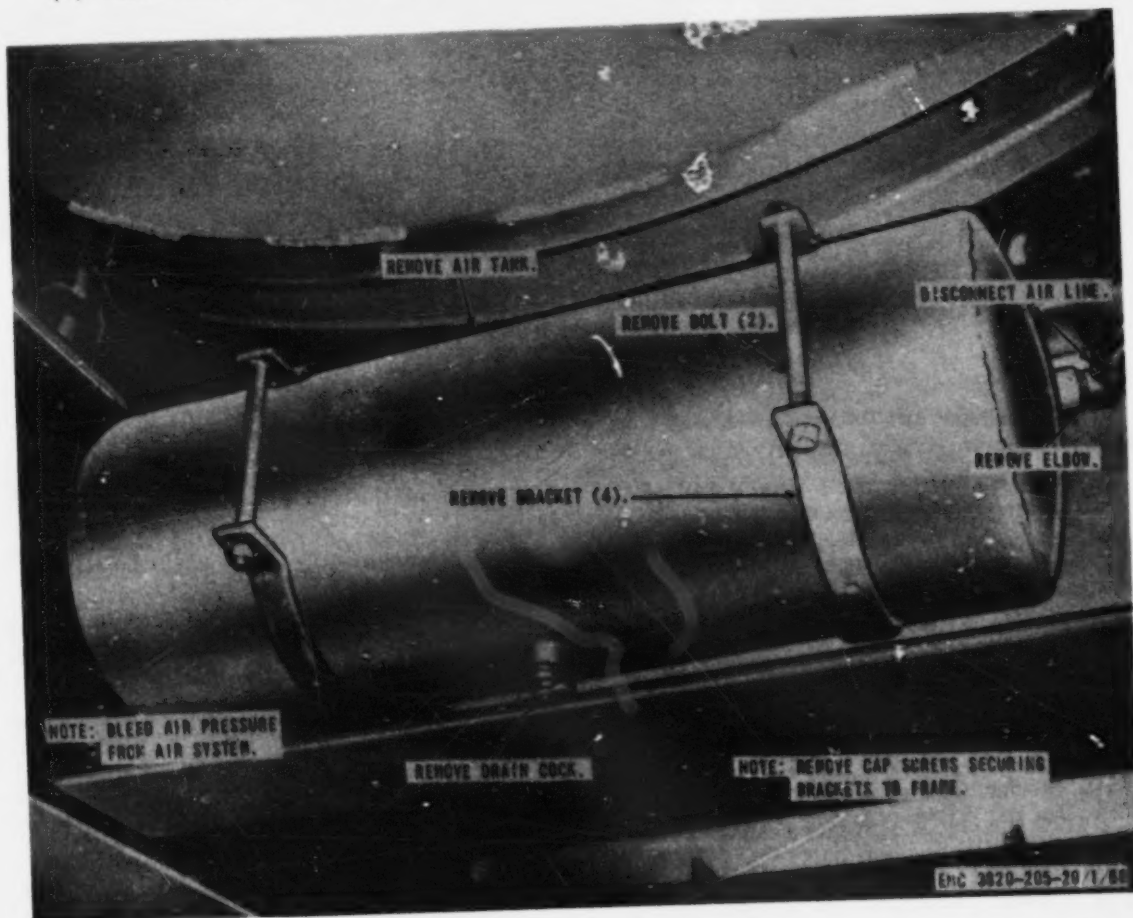
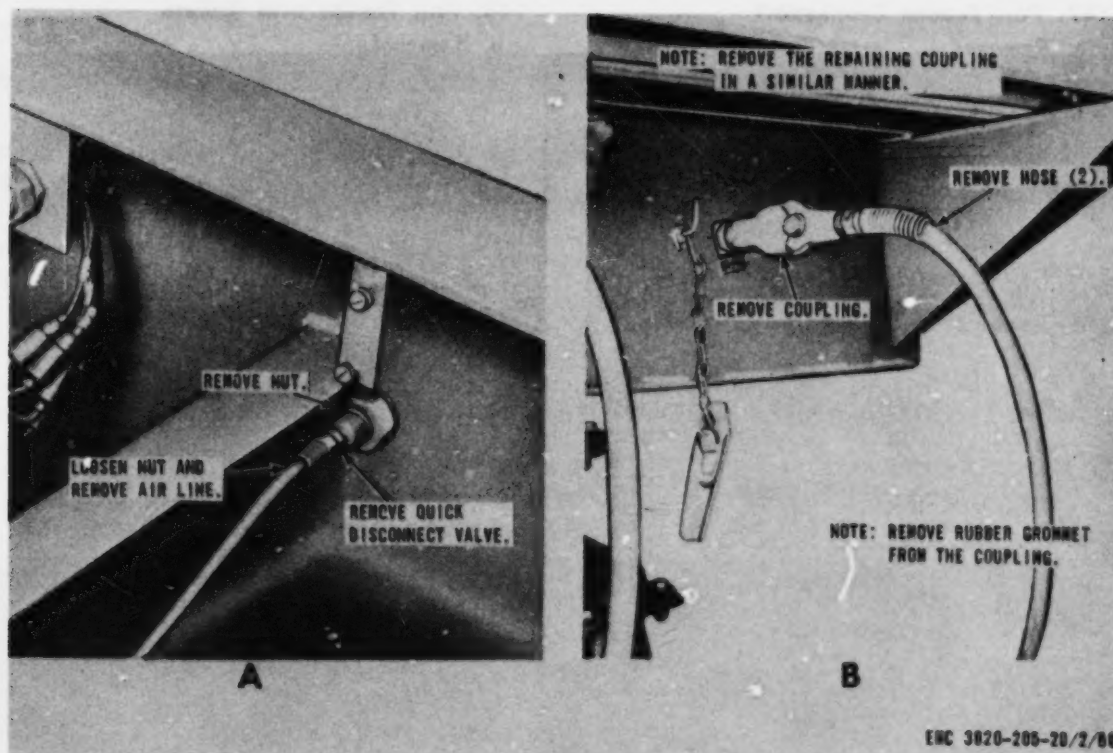


Figure 73. Air tank, removal and installation.



A—Coupling rear view

B—Coupling front view

Figure 74. Coupling, hoses and lines, removal and installation.

Section VII. BELT CONVEYOR ASSEMBLIES

149. General

The feeder belt conveyor is comprised of the head section, center section, and tail section and is powered by an electric motor and gear reducer. The feeder belt conveyor receives the material from the reciprocating feeder and rotary elevator and deposits it on the vibrating screen. The under conveyor belt is powered by an electric motor and gear reducer. The under conveyor belt receives the crushed material from the crusher rolls and deposits the aggregate in the rotary elevator.

150. Feeder Conveyor Belt Adjustment

Adjust the feeder conveyor belt as instructed on figure 84.

151. Under Conveyor Belt Adjustment

Adjust the under conveyor belt as instructed on figure 85.

152. Trough Roller Assembly

a. *Removal.* Remove the trough roller assembly from the unit as instructed on figure 86.

b. *Disassembly.* Disassemble the trough roller as illustrated on figure 87.

c. *Cleaning, Inspection, and Repair.* Clean and inspect all parts. Repair damaged parts. Replace worn and defective parts.

d. *Reassembly.* Reassemble the trough roller as illustrated on figure 87.

e. *Installation.* Install the trough roller assembly on the unit in reverse of the instructions on figure 86.

153. Feeder Conveyor Return Roller Assembly

a. *Removal.* Remove the return roller from the unit as instructed on figure 88.

NOTE: REMOVE REMAINING LIGHTS IN A SIMILAR MANNER.

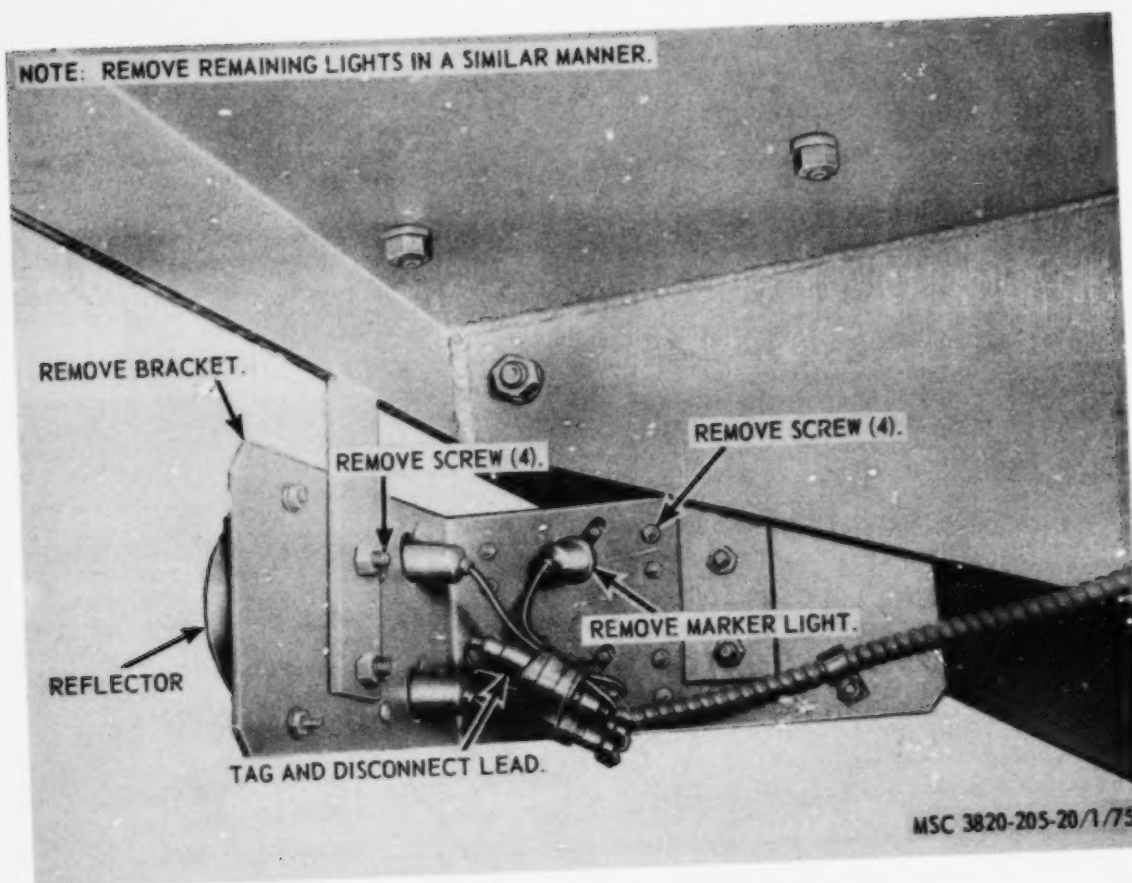


Figure 75. Clearance marker lights, removal and installation.

b. Cleaning, Inspection, and Repair. Clean and inspect all parts. Repair damaged parts. Replace worn and defective parts.

c. Installation. Install the return roller on the unit in reverse of the instructions on figure 88.

154. Feeder Conveyor Belt Under Scraper

a. Removal. Remove feeder conveyor belt under scraper from the unit as instructed on figure 89.

b. Disassembly. Disassemble the feeder belt under scraper as illustrated on figure 90.

c. Cleaning, Inspection, and Repair. Clean and inspect all parts. Repair damaged parts. Replace worn and defective parts.

d. Reassembly. Reassemble the feeder belt under scraper illustrated on figure 90.

e. Installation. Install the feeder belt under scraper on the unit in reverse of the instructions on figure 89.

155. Feeder Conveyor Head Scraper

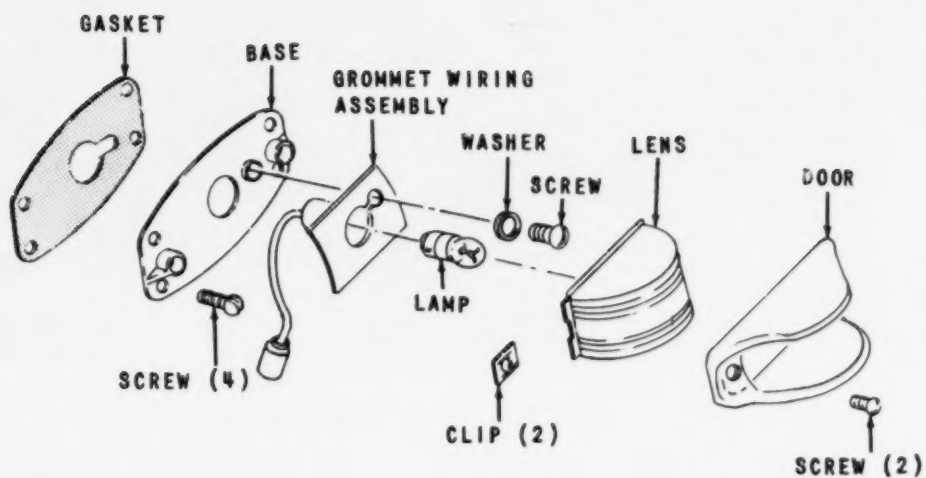
a. Removal. Remove the feeder conveyor head scraper from the unit as instructed on figure 91.

b. Disassembly. Disassemble the feeder conveyor head scraper as illustrated on figure 92.

c. Cleaning, Inspection, and Repair. Clean and inspect all parts. Repair damaged parts. Replace worn and defective parts.

d. Reassembly. Reassemble the feeder conveyor head scraper illustrated on figure 92.

e. Installation. Install the feeder conveyor head scraper on the unit in reverse of the instructions on figure 91.



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Figure 76. Clearance marker lights, exploded view.

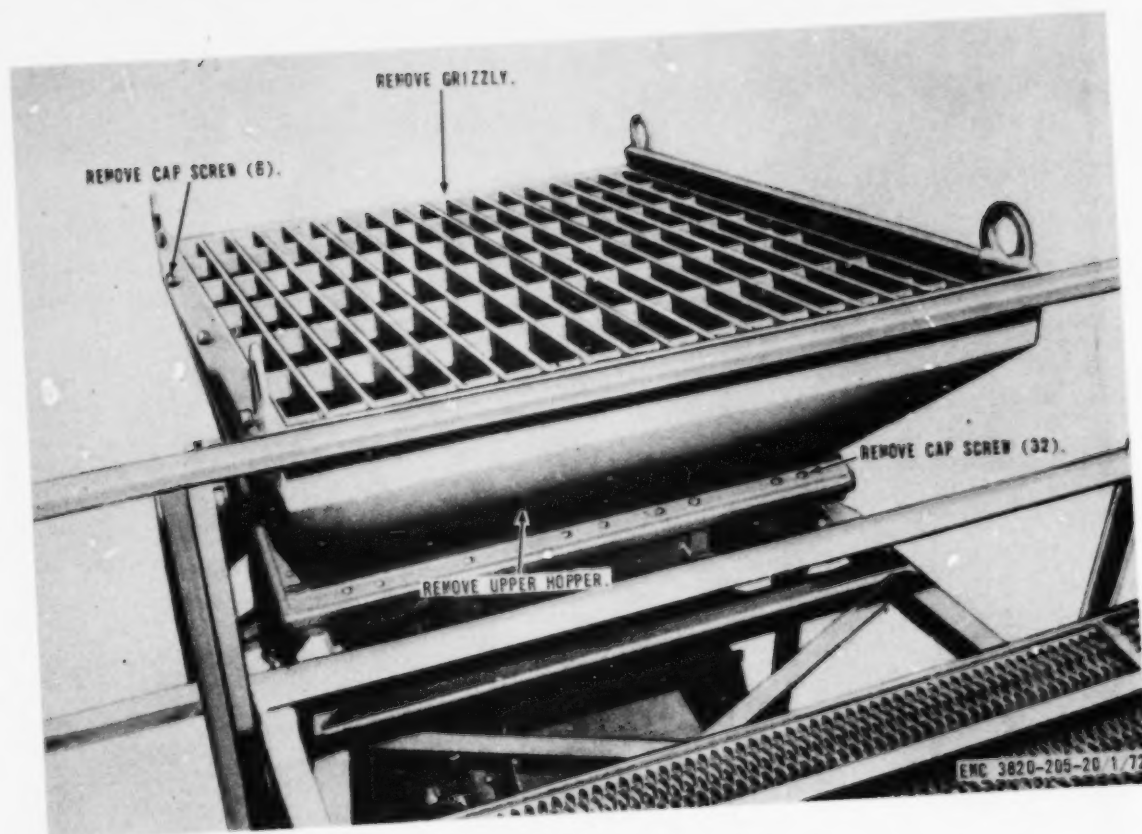


Figure 77. Feeder grizzly and upper hopper, removal and installation.

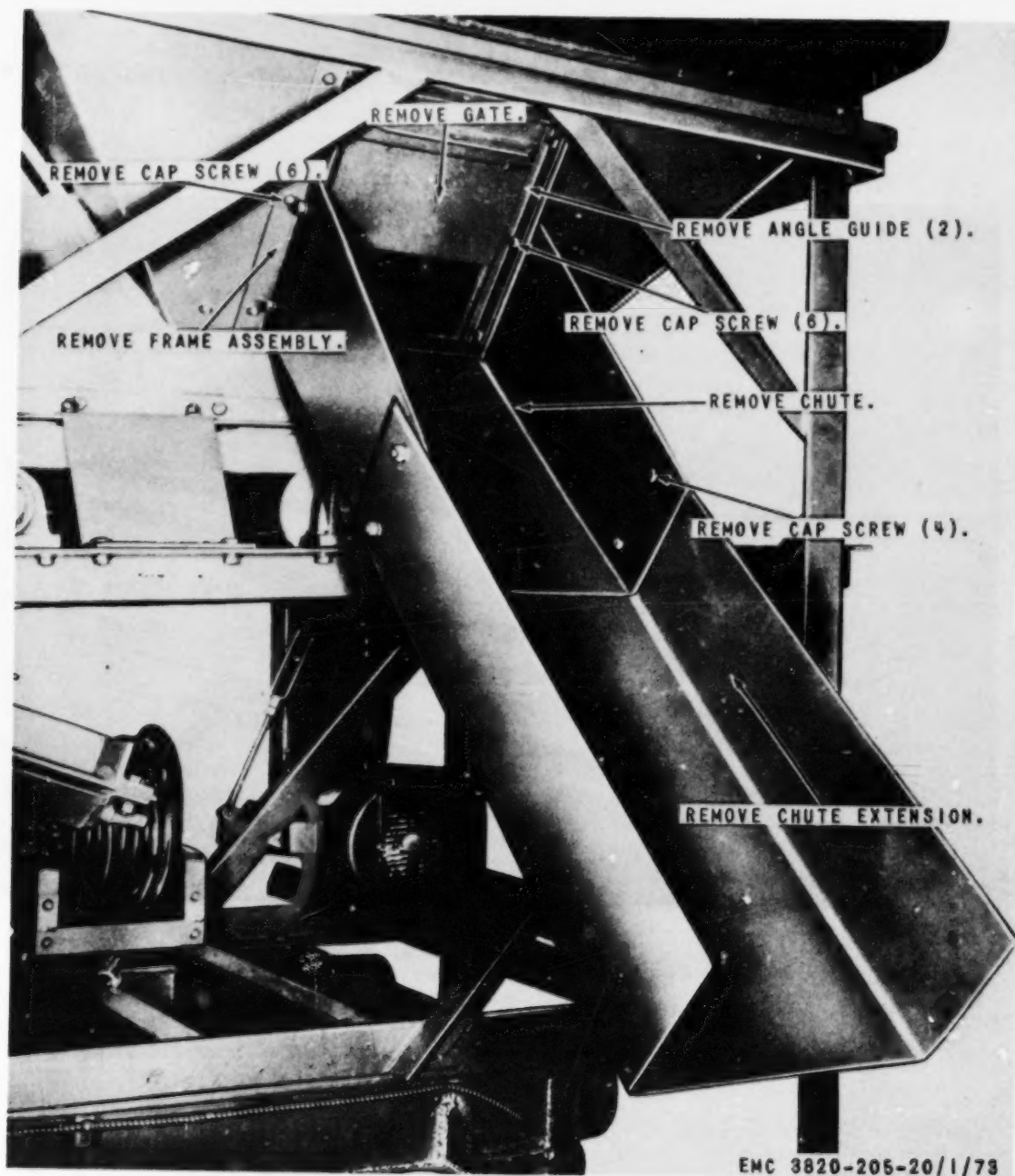


Figure 78. Relief chute, extension, and gate, removal and installation.

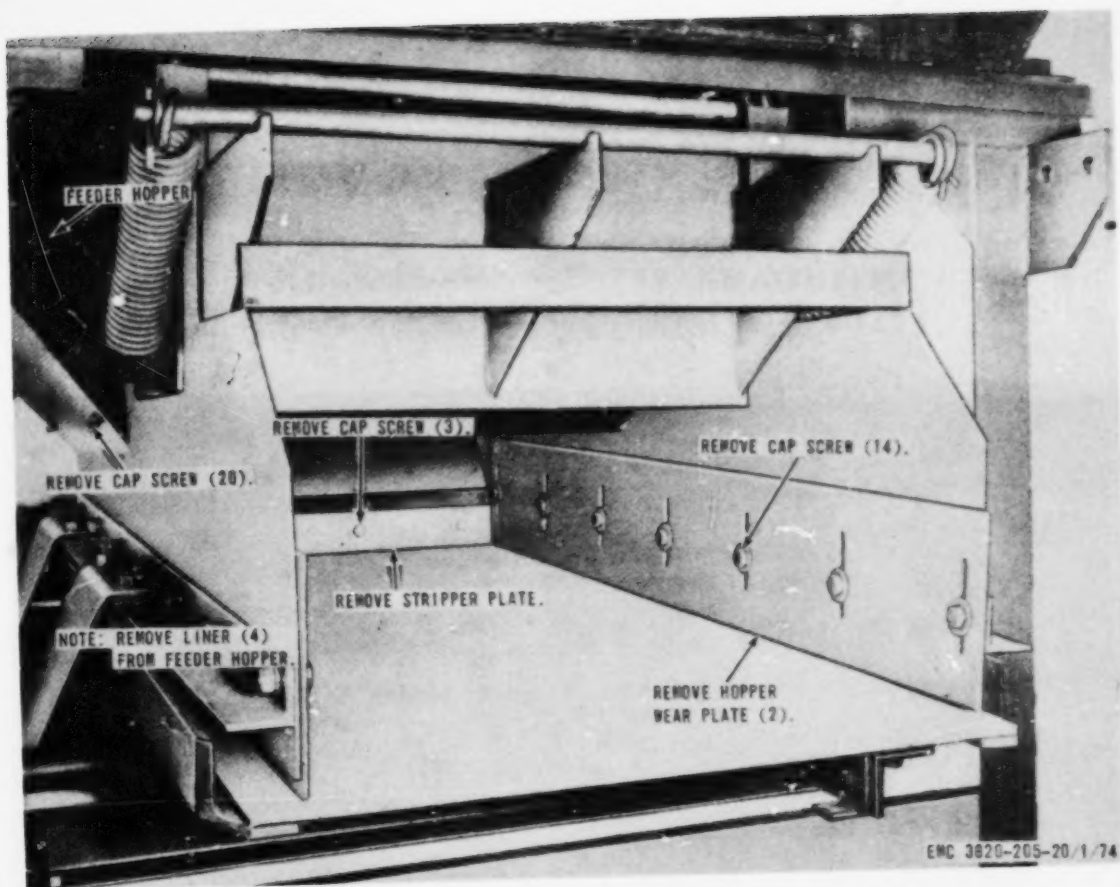


Figure 79. Reciprocating feeder hopper wear plates and liners, removal and installation.

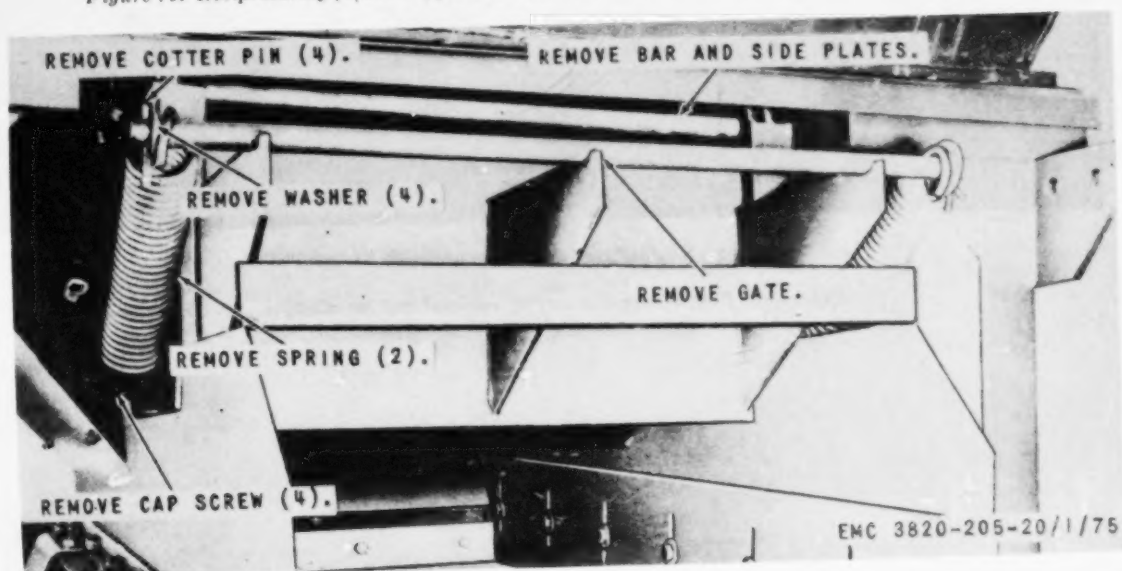


Figure 80. Reciprocating feeder gate, removal and installation.

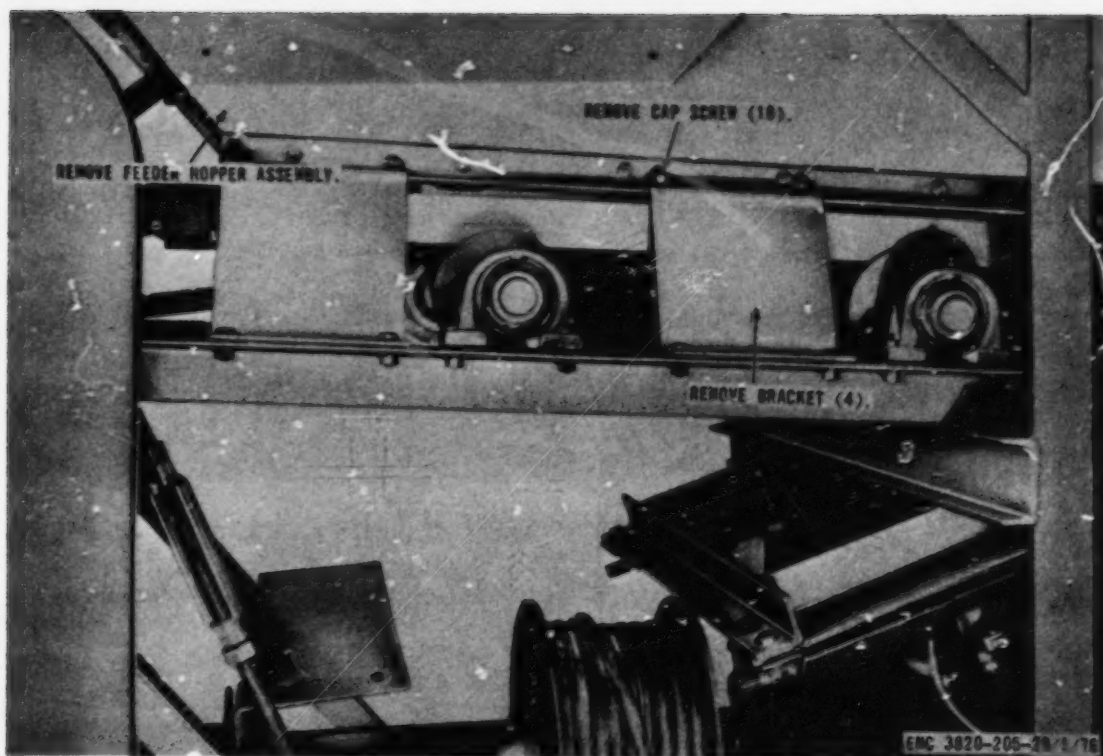


Figure 81. Feeder hopper assembly removal and installation.

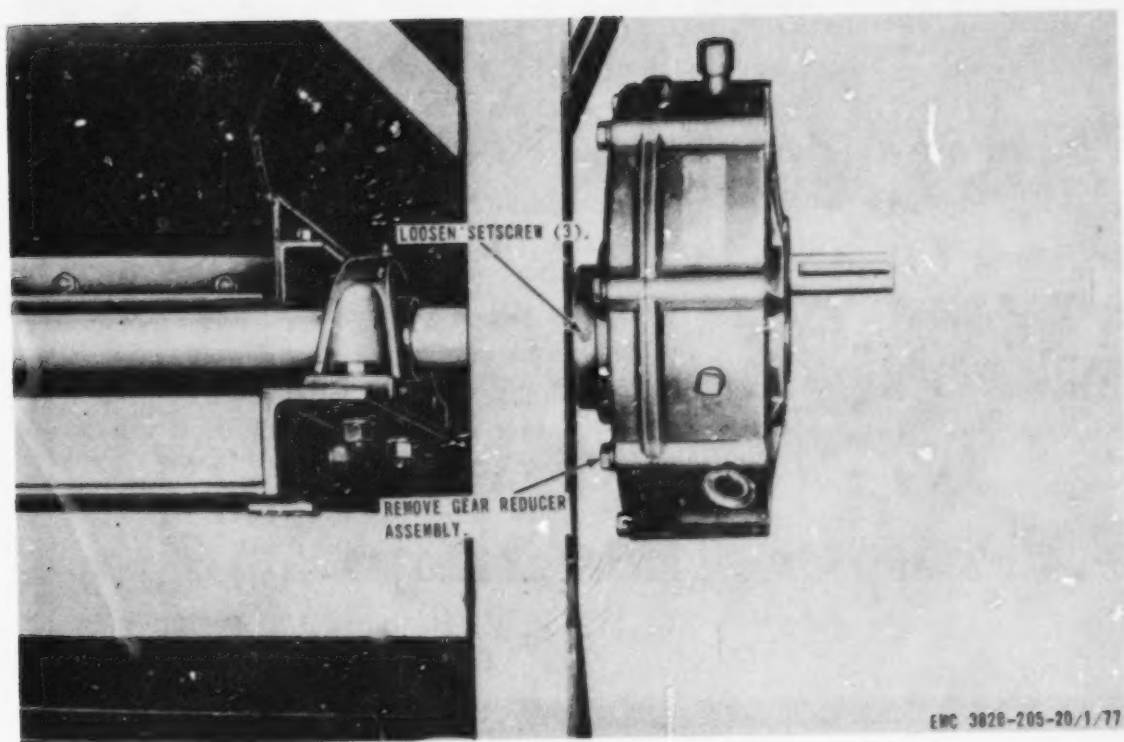


Figure 82. Gear reducer assembly, removal and installation.

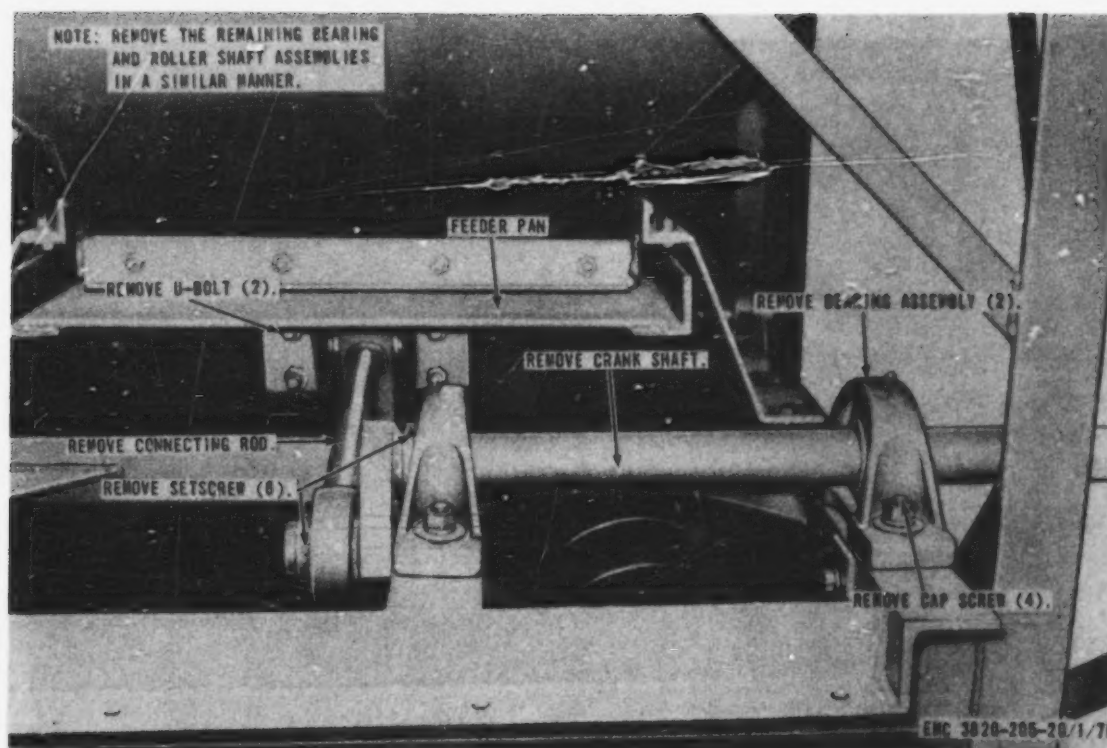
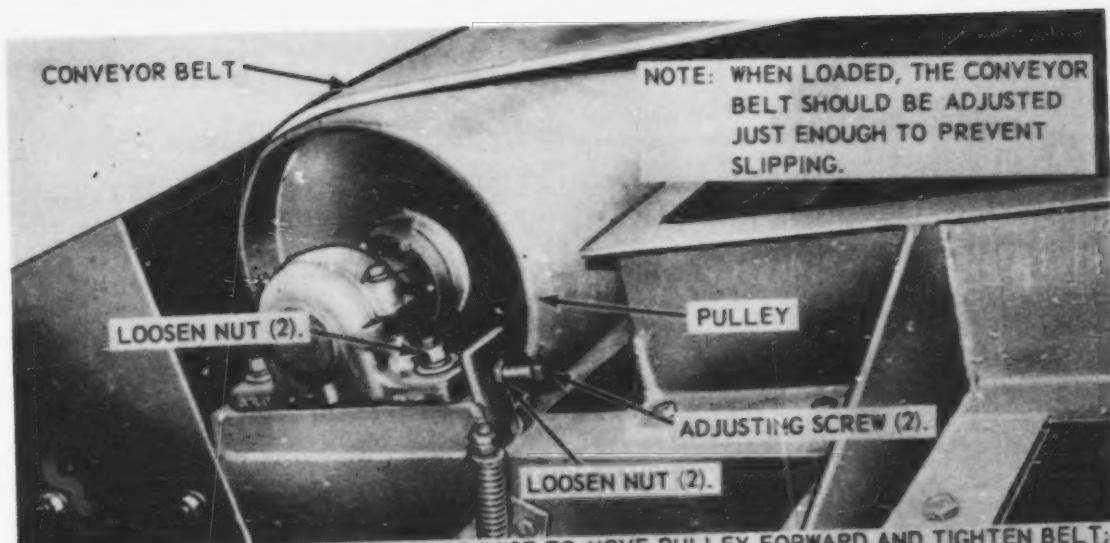


Figure 83. Pan feeder crankshaft, removal and installation,



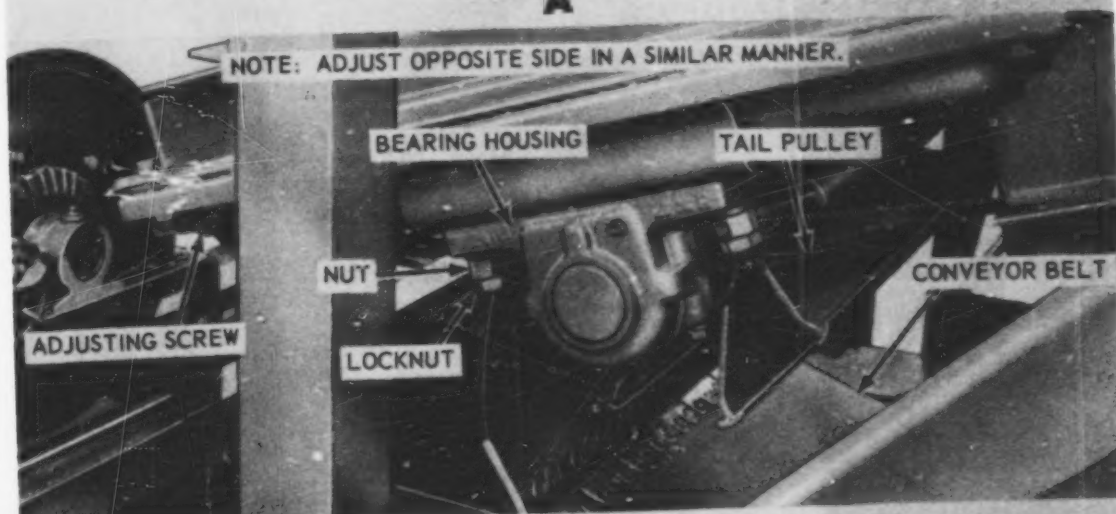
NOTE: WHEN LOADED, THE CONVEYOR BELT SHOULD BE ADJUSTED JUST ENOUGH TO PREVENT SLIPPING.

NOTE: TURN ADJUSTING SCREW CLOCKWISE TO MOVE PULLEY FORWARD AND TIGHTEN BELT; TURN COUNTERCLOCKWISE TO MOVE PULLEY REARWARD AND LOOSEN BELT. TIGHTEN NUTS.

NOTE: PROPER ADJUSTMENT IS OBTAINED WHEN BELT RIDES EVENLY ON PULLEY.

NOTE: ADJUST OPPOSITE SIDE OF PULLEY IN A SIMILAR MANNER.

A



NOTE: ADJUST OPPOSITE SIDE IN A SIMILAR MANNER.

1. LOOSEN LOCKNUT AND NUT ON BEARING HOUSING.
2. TURN ADJUSTING SCREW CLOCKWISE TO INCREASE OR COUNTERCLOCKWISE TO DECREASE TENSION. BELT SHOULD BE ADJUSTED TO OPERATE UNDER LOAD WITHOUT SLIPPING.
3. TIGHTEN LOCKNUT AND NUT ON BEARING HOUSING.

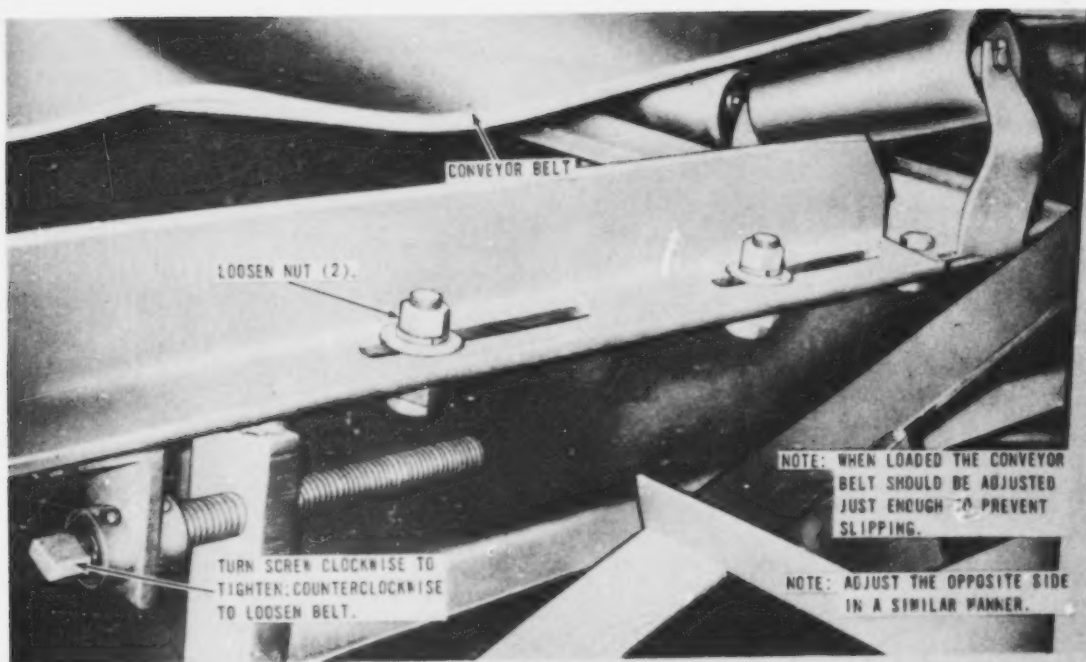
B

MSC 3820-205-20/1/84

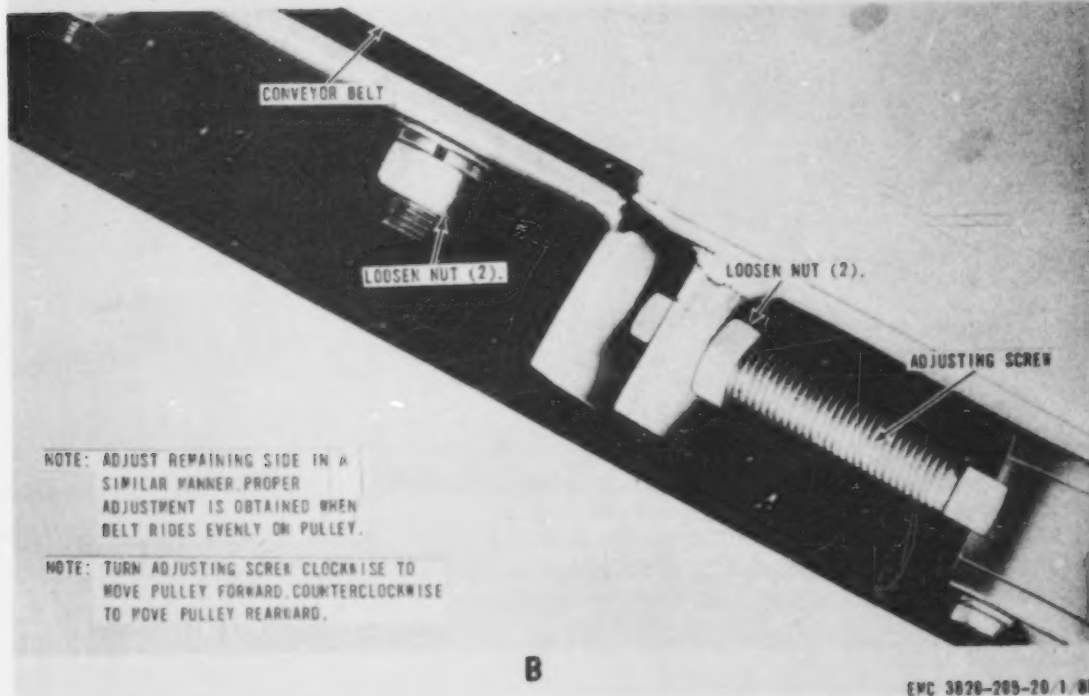
A—Head pulley

B—Tail pulley

Figure 84. Feeder conveyor belt, adjustment.



A



B

EMC 3820-209-20/1 88

A - Upper pulley adjustment

B - Lower pulley adjustment

Figure 85. Under conveyor belt, adjustment.

BELT ALIGNMENT: IF BELT RUNS TO RIGHT, LOOSEN SCREW (4) AND SHIFT TROUGH ROLLER RIGHT END FORWARD OR LEFT AND BACKWARD. REVERSE PROCEDURE IF BELT RUNS TO LEFT. DO NOT CORRECT THE BELT ALIGNMENT BY EXTREME SHIFTING OF ONE ROLLER, BUT RATHER BY A SLIGHT SHIFTING OF A NUMBER OF CARRIERS.

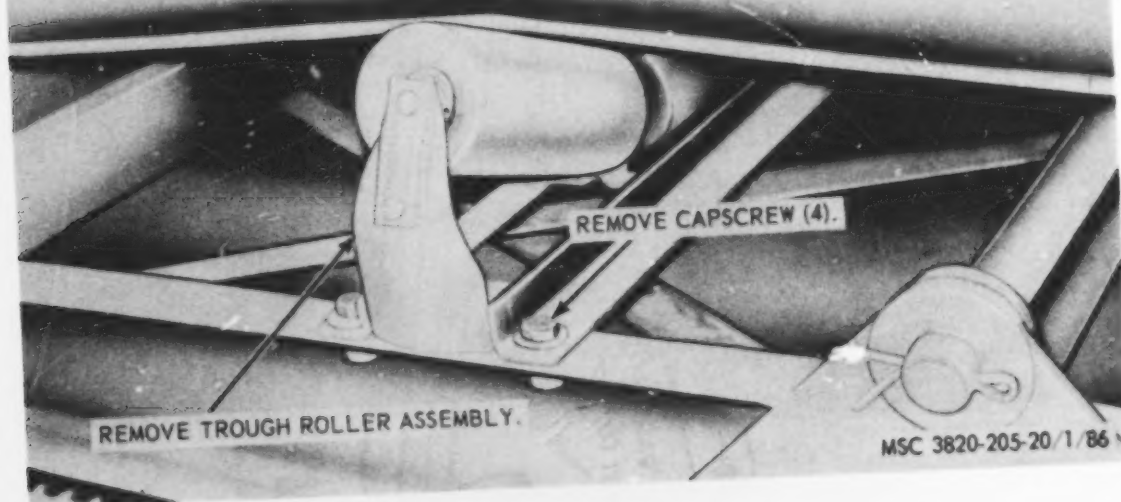
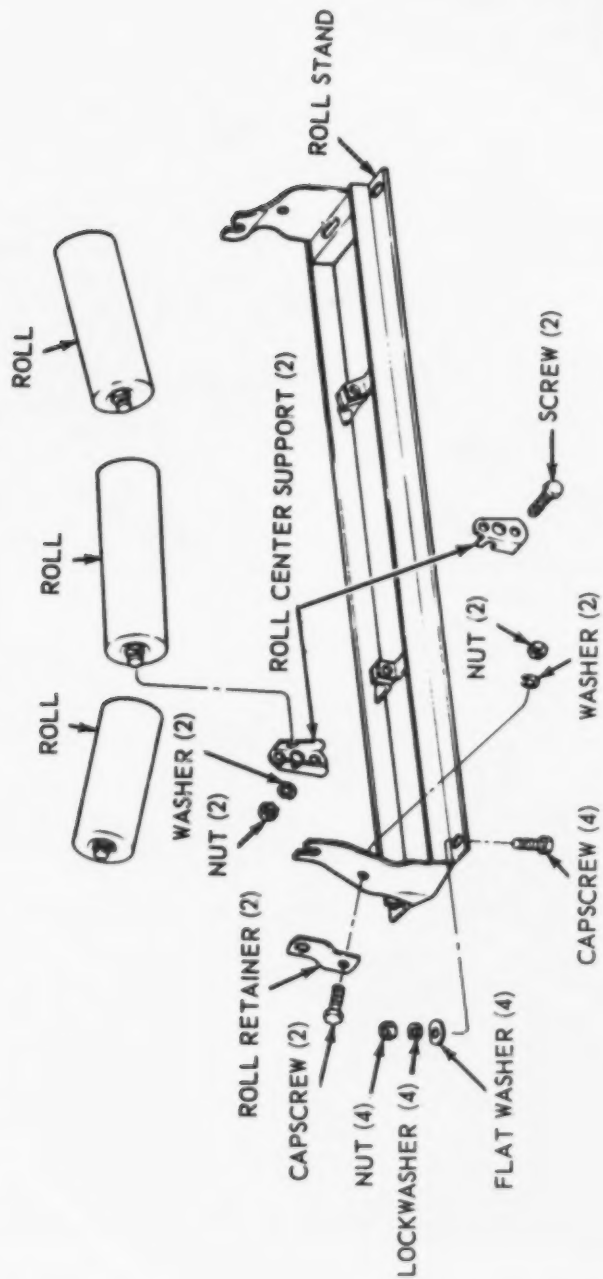


Figure 86. Trough roller assembly, removal, installation, and adjustment.

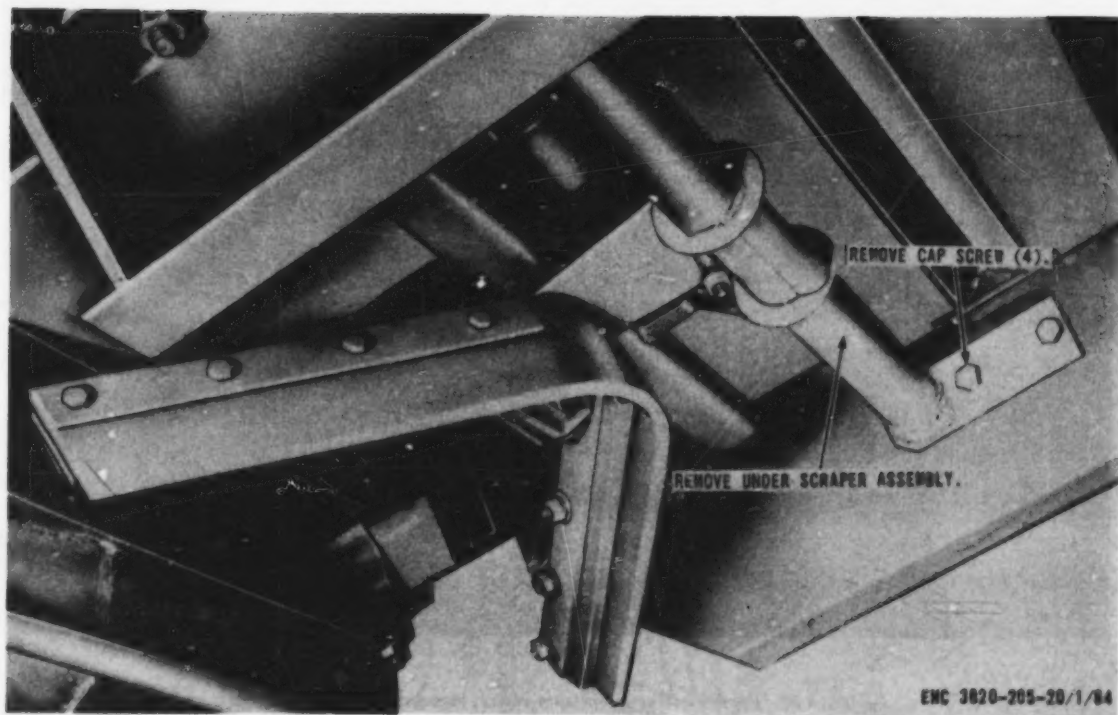


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Figure 87. Trough roller, exploded view.

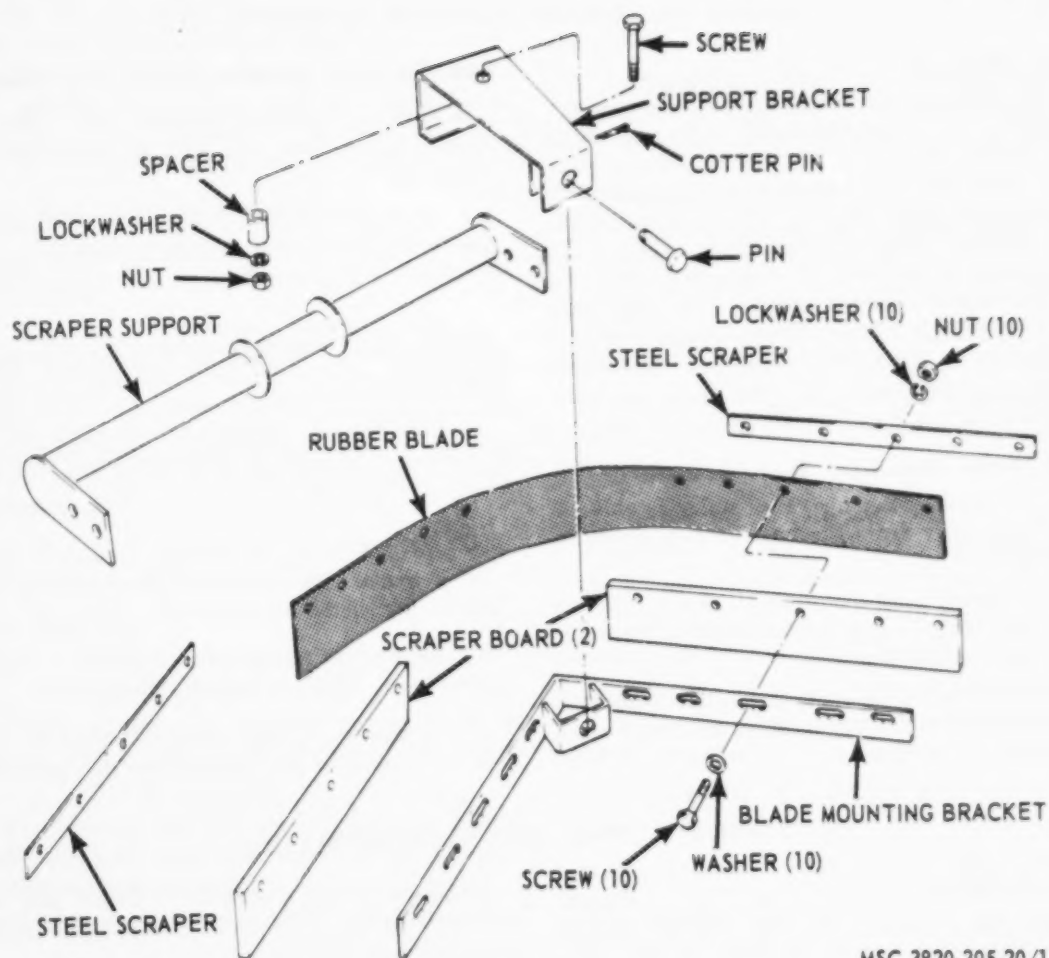


Figure 88. Feeder conveyor return roller, removal and installation.



ENC 3820-205-20/1/84

Figure 89. Feeder conveyor belt under scraper assembly, removal and installation.



MSC 3820-205-20/1/90

Figure 90. Feeder conveyor belt under scraper, exploded view.

156. Under Belt Scraper

a. Removal. Remove the under belt scraper from the unit as instructed on figure 93.

b. Disassembly. Disassemble the under belt scraper as illustrated on figure 94.

c. Cleaning, Inspection, and Repair. Clean

and inspect all parts. Repair damaged parts. Replace worn and defective parts.

d. Reassembly. Reassemble the under belt scraper illustrated on figure 94.

e. Installation. Install the under belt scraper on the unit in the reverse of the instructions on figure 93.

Section VIII. ROTARY ELEVATOR ASSEMBLY

157. General

The primary function of the rotary elevator assembly is to transfer the aggregate from the under conveyor belt to the feeder conveyor belt. The rotary elevator wheel is driven by rubber trunnions mounted on the rotary elevator frame, under the elevator wheel. The trunnions are shielded by plate guard mounted on the rotary elevator frame. The roller stabilizer shaft is located on the rotary elevator frame above the rotary elevator wheel. The roller stabilizer shaft holds the rotary elevator wheel steady during operations.

158. Roller Stabilizer Shaft Assembly

a. Removal. Remove the roller stabilizer shaft assembly from the unit as instructed on figure 95.

b. Cleaning and Inspection. Clean and inspect all parts. Replace a defective or damaged part as necessary.

c. Installation. Install the roller stabilizer shaft assembly on the unit in reverse of the instructions on figure 95.

159. Elevator Wheel Trunnion and Guard

a. Guard Removal. Remove the elevator wheel guards from the unit as instructed on figure 96.

b. Elevator Wheel Trunnion Adjustment. Adjust the elevator wheel trunnion as instructed on figure 96.

c. Cleaning and Inspection. Clean and inspect all parts. Replace all defective or damaged parts.

d. Installation. Install the elevator wheel guards on the unit in reverse of the instructions on figure 96.

160. Deflectors

a. Removal. Remove the deflectors from the unit as instructed on figure 97.

b. Cleaning, Inspection and Repair. Clean and inspect. Replace defective deflectors.

c. Installation. Install the deflectors on the unit in reverse of the instructions on figure 97.

Section IX. ROLL CRUSHER ASSEMBLY

161. General

The roll crusher assembly consists of an adjustable roller and a stationary roller. The rollers can be adjusted to crush aggregate from 3 inches to $\frac{1}{4}$ inch. The roll crusher is driven by belts from the engine drive sheave to the grooved balance wheel.

162. Crusher Roller Tension Spring

a. Removal. Remove the crusher roller tension springs from the unit as instructed on figure 98.

b. Cleaning and Inspection. Clean and inspect all parts. Replace all defective or damaged parts.

c. Installation. Install the crusher roller tension springs on the unit in reverse of the instructions on figure 98.

d. Adjustment. Adjust the crusher roller tension springs (TM 5-3820-205-10/1).

163. Crusher Chute and Liner

a. Removal. Remove the crusher chute and liner from the unit as instructed on figure 99.

b. Cleaning, Inspection, and Repair. Clean and inspect all parts. Replace or repair all defective or damaged parts.

c. Installation. Install the crusher chute and liner on the unit in reverse of the instructions on figure 99.

Section X. VIBRATOR SCREEN ASSEMBLY

164. General

The screen vibration is produced by the eccentric shaft and balance wheels. The shaft is driven by a 15-horsepower electric motor. The capacity of screening depends upon the slope, throw, and revolutions per minute of the mechanism, screen surface used, and whether the mechanism is operated for the flow or counterflow of aggregate on the screens.

165. Balance Wheel Assembly

a. Removal. Remove the balance wheel assembly from the unit as instructed on figure 100.

b. Cleaning and Inspection. Clean and inspect the balance wheel assembly. Replace a defective or damaged balance wheel assembly.

c. Installation. Install the balance wheel assembly on the unit in reverse of the instructions on figure 100.

166. Vibrator Screen Support Bar and Rubber Deflectors

a. Removal.

- (1) Remove the vibrator screen (TM 5-3820-205-10/1).
- (2) Remove the vibrator screen support bars and rubber deflectors from the unit as instructed on figure 101.

b. Cleaning, Inspection, and Repair. Clean and inspect all parts. Replace or repair a defective or damaged part.

c. Installation.

- (1) Install the vibrator screen support bars and rubber deflectors on the unit in reverse of the instructions on figure 101.
- (2) Install the vibrator screen (TM 5-3820-205-10/1).

167. Discharge Chute Assembly

a. Removal. Remove the discharge chute ex-

tension and liners from the unit as instructed on figure 102.

b. Cleaning and Inspection. Clean and inspect all parts. Replace a defective or damaged part.

c. Installation. Install the discharge chute extension and liners on the unit in reverse of the instructions on figure 102.

168. Discharge Gate

a. Removal. Remove the discharge gate from the unit as instructed on figure 103.

b. Cleaning, Inspection, and Repair. Clean and inspect all parts. Repair or replace a damaged part as necessary.

c. Installation. Install the discharge gate on the unit in reverse of the instructions on figure 103.

169. Lower Screen Hopper

a. Removal. Remove the lower screen hopper from the unit as instructed on figure 104.

b. Disassembly. Disassemble the lower screen hopper as illustrated on figure 105.

c. Cleaning, Inspection, and Repair. Clean and inspect all parts. Repair or replace a damaged part as necessary.

d. Reassembly. Reassemble the lower screen hopper illustrated on figure 105.

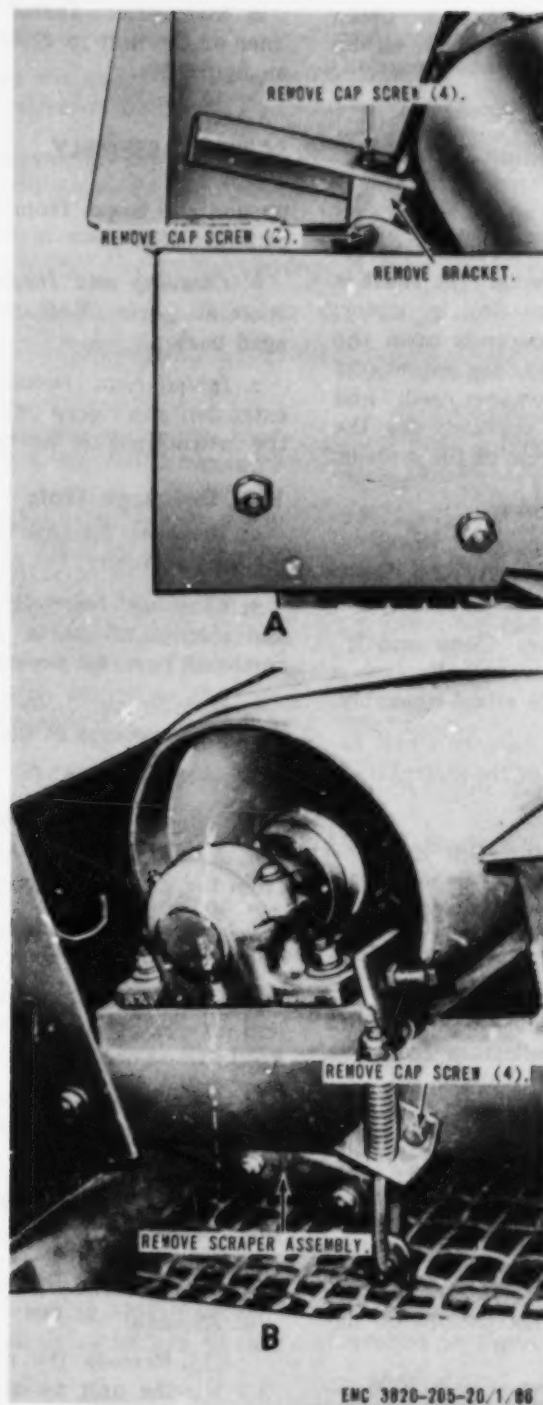
e. Installation. Install the lower screen hopper on the unit in reverse of the instructions on figure 104.

170. Rubber Mountings and Deflectors

a. Removal.

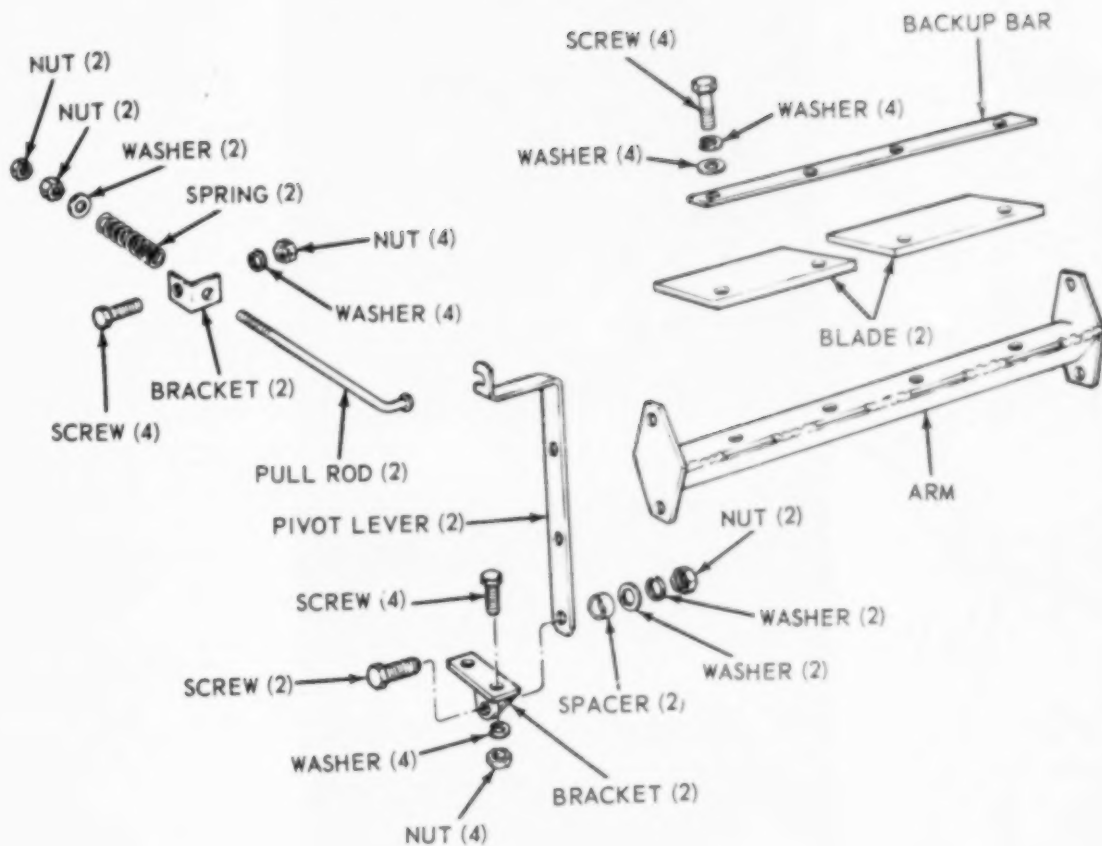
- (1) Remove the rubber mountings from the unit as instructed on figure 106.
- (2) Remove the rubber deflectors from the unit as instructed on figure 107.

b. Cleaning and Inspection. Clean and in-



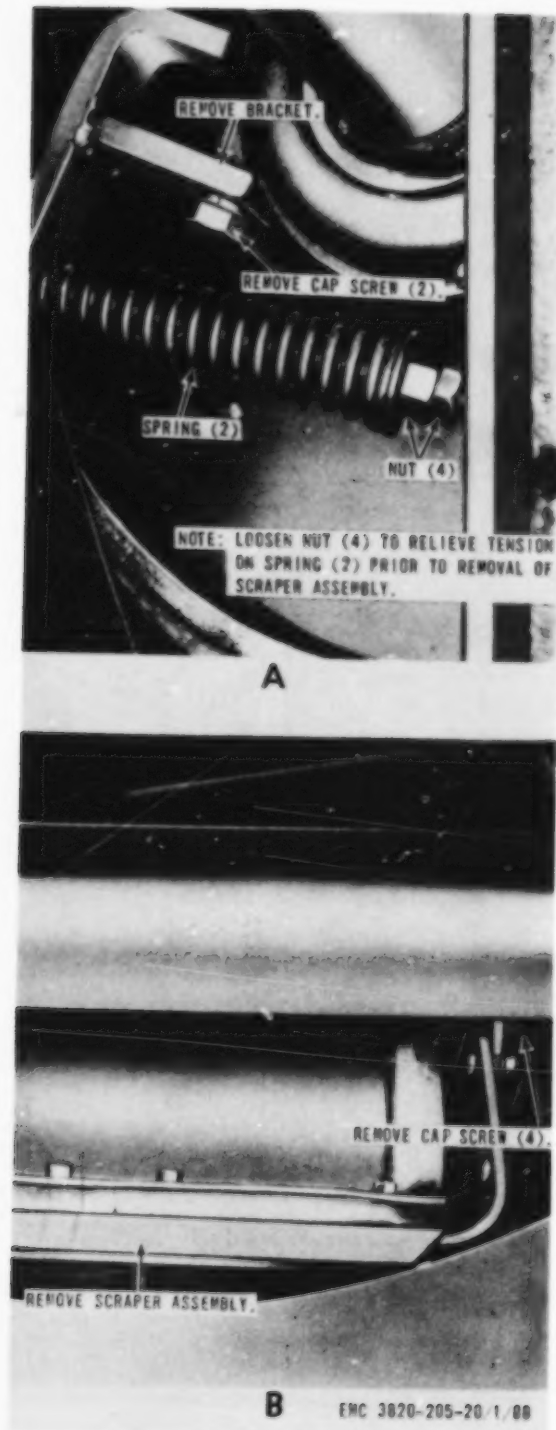
A—Bracket installed
B—Feeder head scraper installed

Figure 91. Feeder conveyor head scraper assembly, removal and installation.



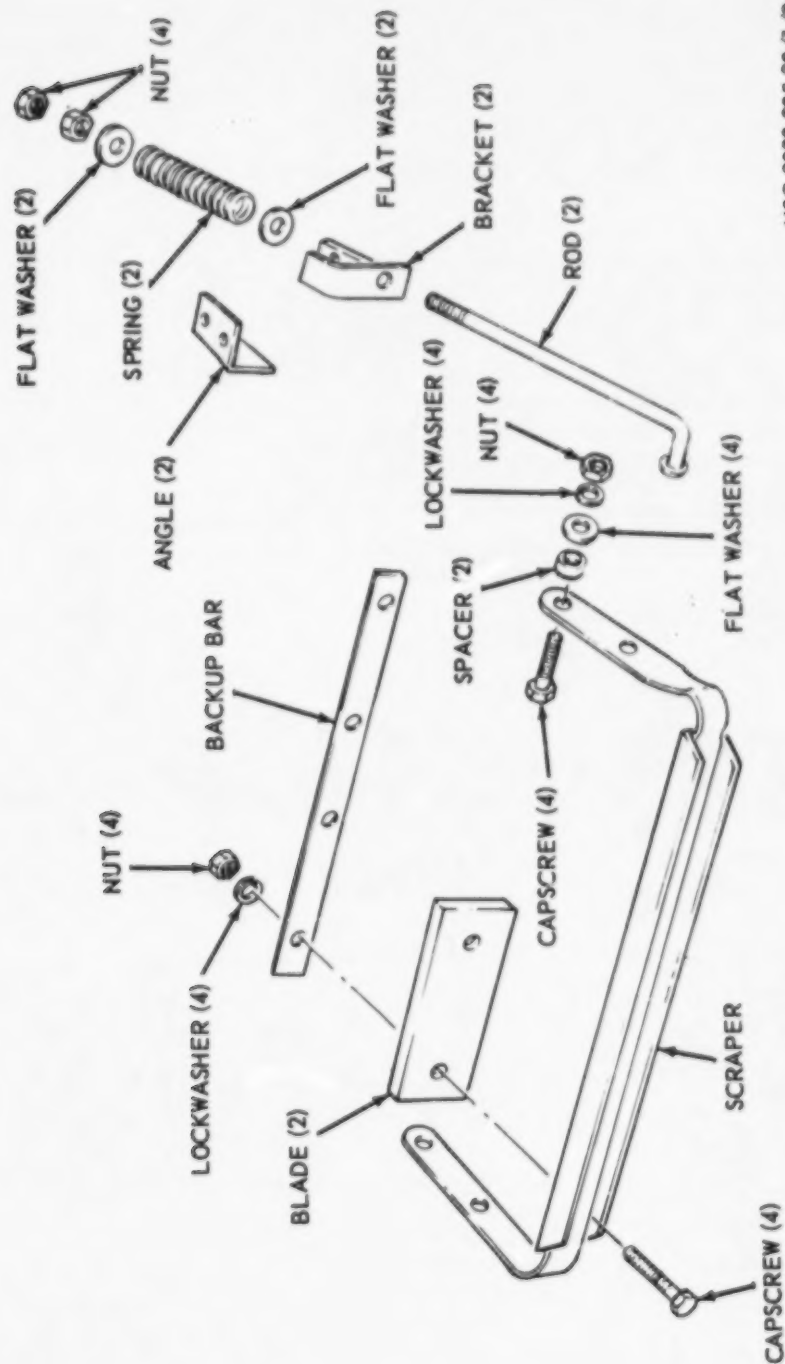
MSC 3820-205-20/1/92

Figure 92. Feeder conveyor head scraper, exploded view.



A - Bracket installed
B - Scraper assembly installed

Figure 9.3. Under belt scraper, removal and installation.



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Figure 84. Under belt scraper, exploded view.

spect all parts. Replace all defective or damaged parts.

c. Installation.

- (1) Install the rubber mountings on the

unit in reverse of the instructions on figure 106.

- (2) Install the rubber deflectors on the unit in reverse of the instructions on figure 107.

Section XI. WALKWAYS, LADDERS, AND PINTLE HOOK

171. General

The walkways are mounted on the crusher frame and serve as platforms from which the operator services, inspects, and controls the crusher operation. The ladders give easy access from the ground to the walkways and engine platform. The pintle hook assembly is located on the rear of the trailer frame. The pintle hook is used for towing accessory units.

172. Ladder Assemblies

a. Removal. Remove the ladder assemblies from the unit as instructed on figure 108.

b. Cleaning and Inspection. Clean and inspect all parts. Replace all defective or damaged parts.

c. Installation. Install the ladder assemblies on the unit in reverse of the instructions on figure 108.

173. Walkway Assemblies

a. Removal.

- (1) Remove the ladders (par. 172).
- (2) Remove the walkway assemblies from the unit as instructed on figure 109.

b. Cleaning and Inspection. Clean and inspect all parts. Replace all defective or damaged parts.

c. Installation.

- (1) Install the walkway assemblies on the unit in reverse of the instructions on figure 109.

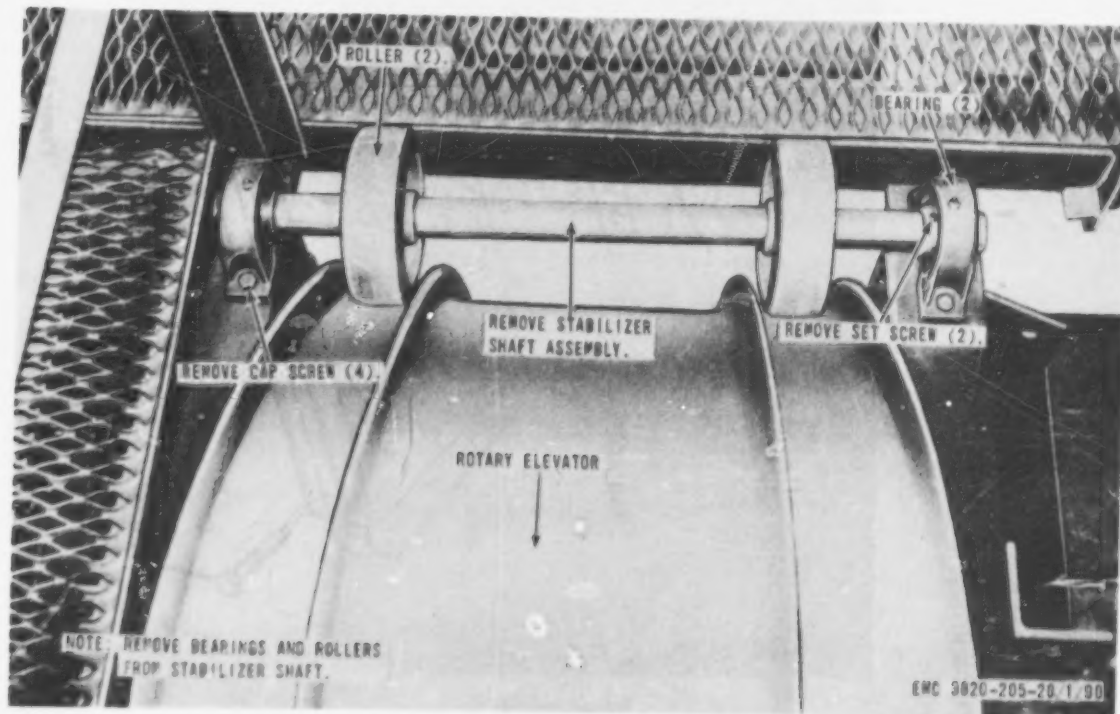


Figure 95. Roller stabilizer and bearing, removal and installation.

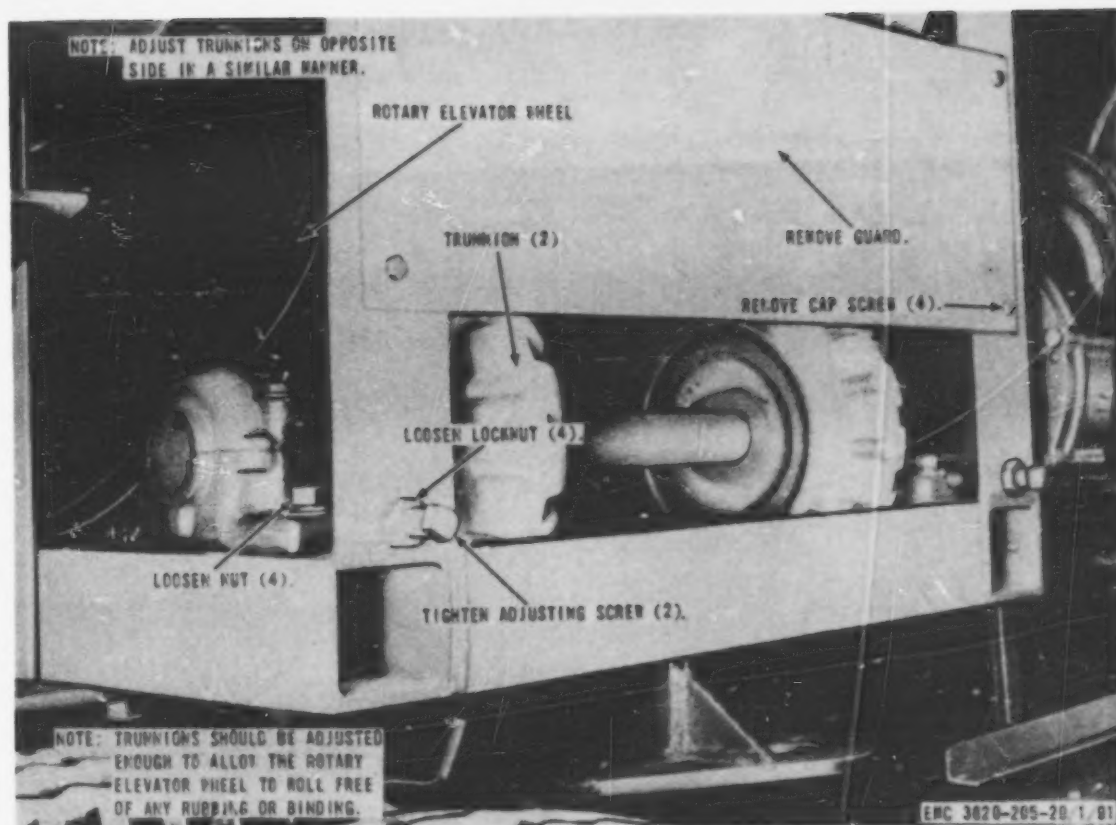


Figure 86. Elevator wheel trunnion and guard adjustment, removal and installation.

(2) Install the ladders (par. 172).

174. Pintle Hook Assembly

a. *Removal.* Remove the pintle hook assembly from the unit as instructed on figure 110.

b. *Disassembly.* Disassemble the pintle hook assembly as illustrated on figure 111.

c. *Cleaning, Inspection, and Repair.* Clean

and inspect all parts. Replace or repair all defective or damaged parts.

d. *Reassembly.* Reassemble the pintle hook illustrated on figure 111.

e. *Installation.* Install the pintle hook assembly on the unit in reverse of the instructions on figure 110.

Section XII. REAR WHEELS, TIRES, AND BRAKES

175. General

The rear wheels, tires, and brakes consist of wheels, tires, hub, slack adjusters, and brake assemblies. The wheels are dual-type and separated by a spacer. The assembly is secured to the hub and brakedrum.

176. Wheels and Tires

a. *Removal.* Remove wheels (par. 111).

b. *Cleaning, Inspection, and Repair.* Clean and inspect wheels and tires. Replace defective wheels and tires. Repair tires as instructed in TM 9-1870-1.

c. *Installation.* Install the wheels (par. 111).

177. Wheel Hub Assembly and Brakedrum

a. *Removal.*

(1) Remove the wheels (par. 111).

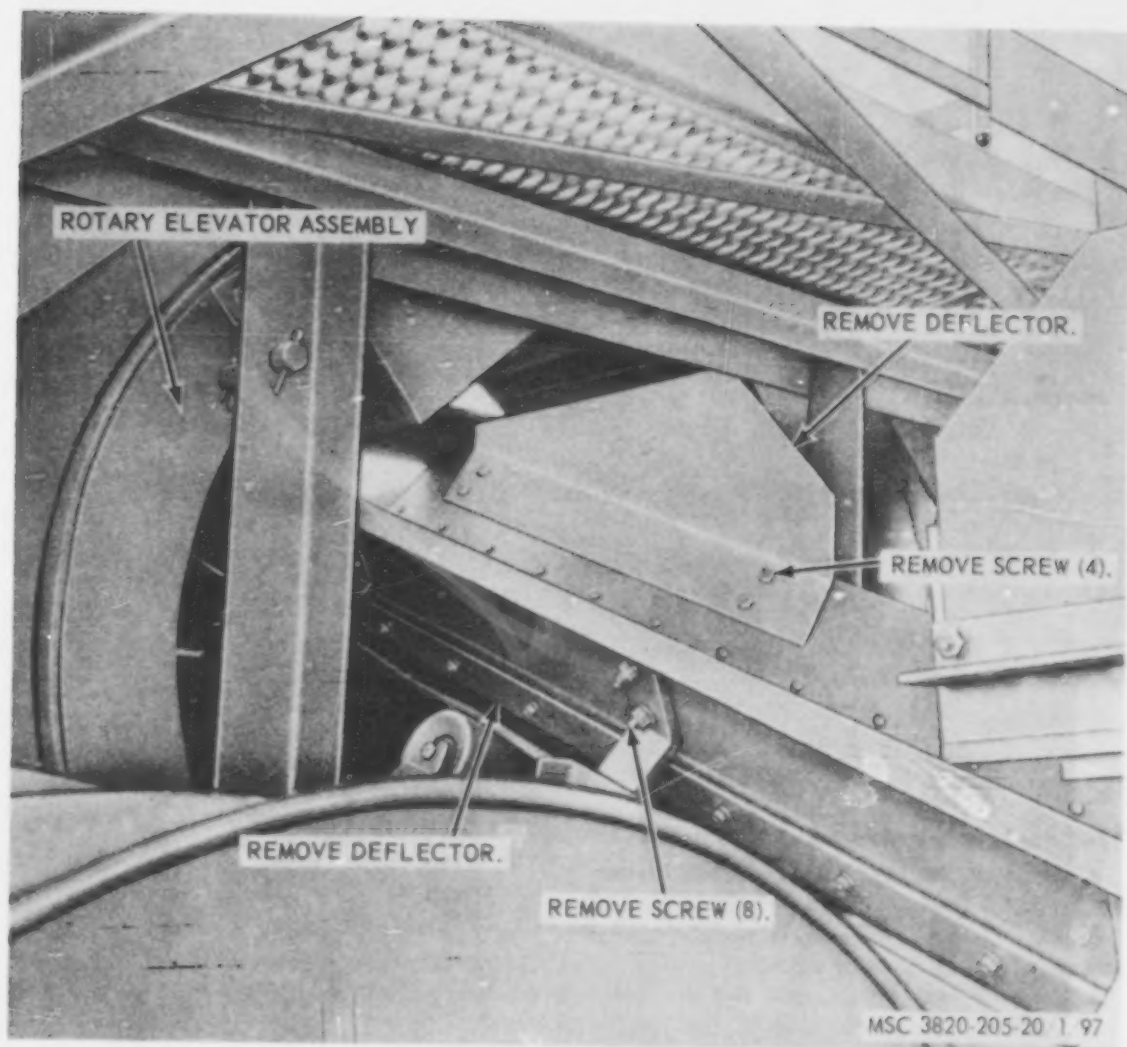


Figure 97. Rotary elevator deflectors, removal and installation.

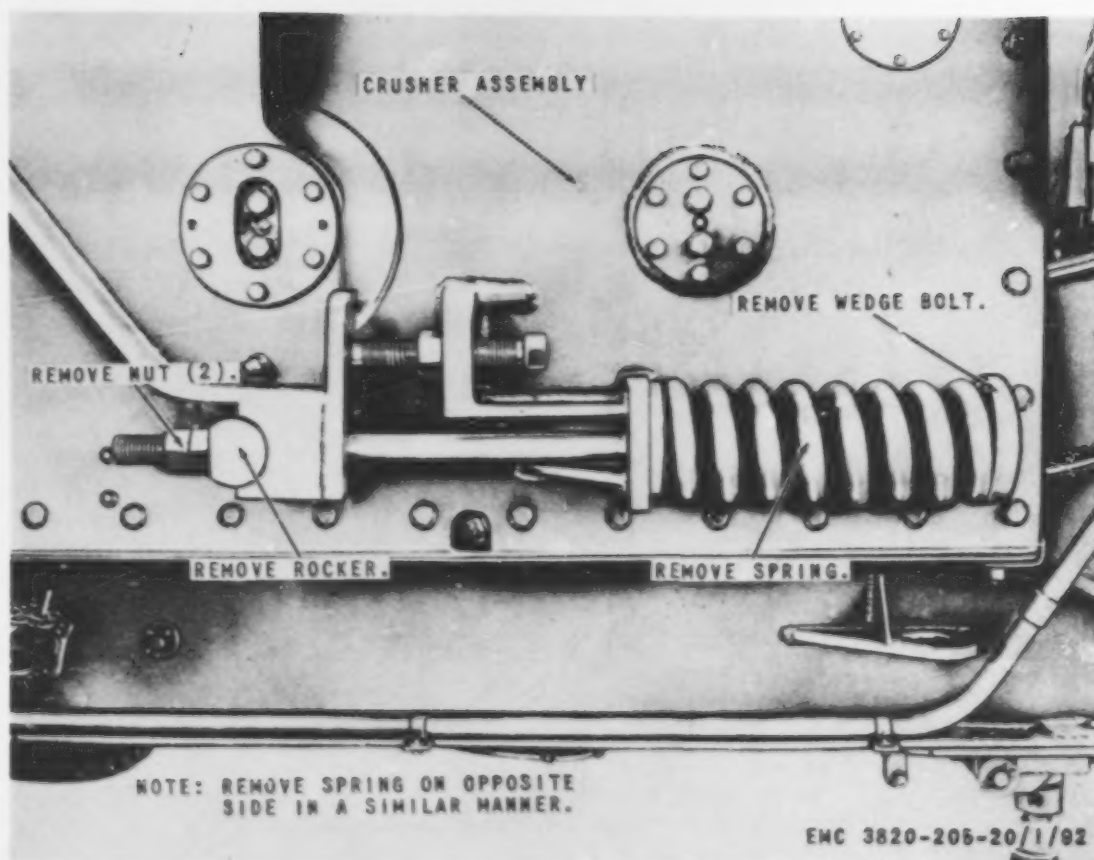


Figure 98. Crusher roller tension spring, removal and installation.

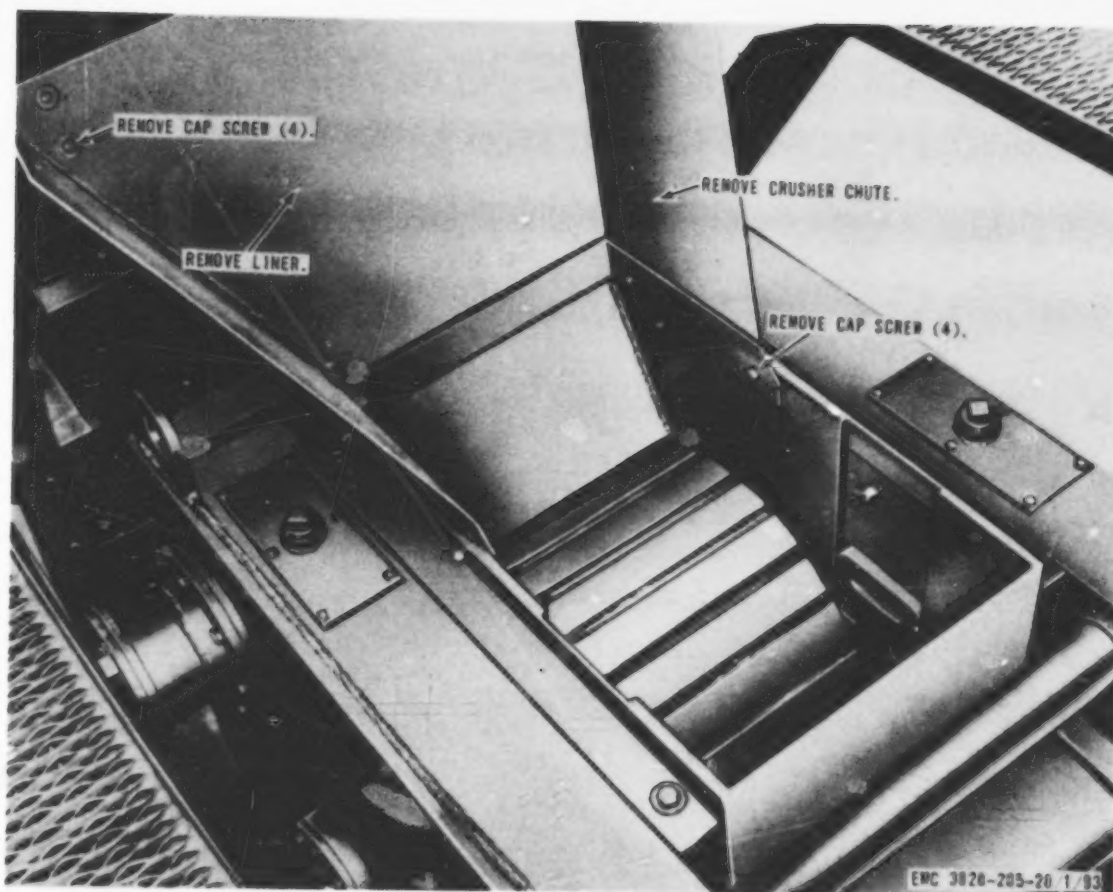


Figure 99. Crusher chute and liner, removal and installation.

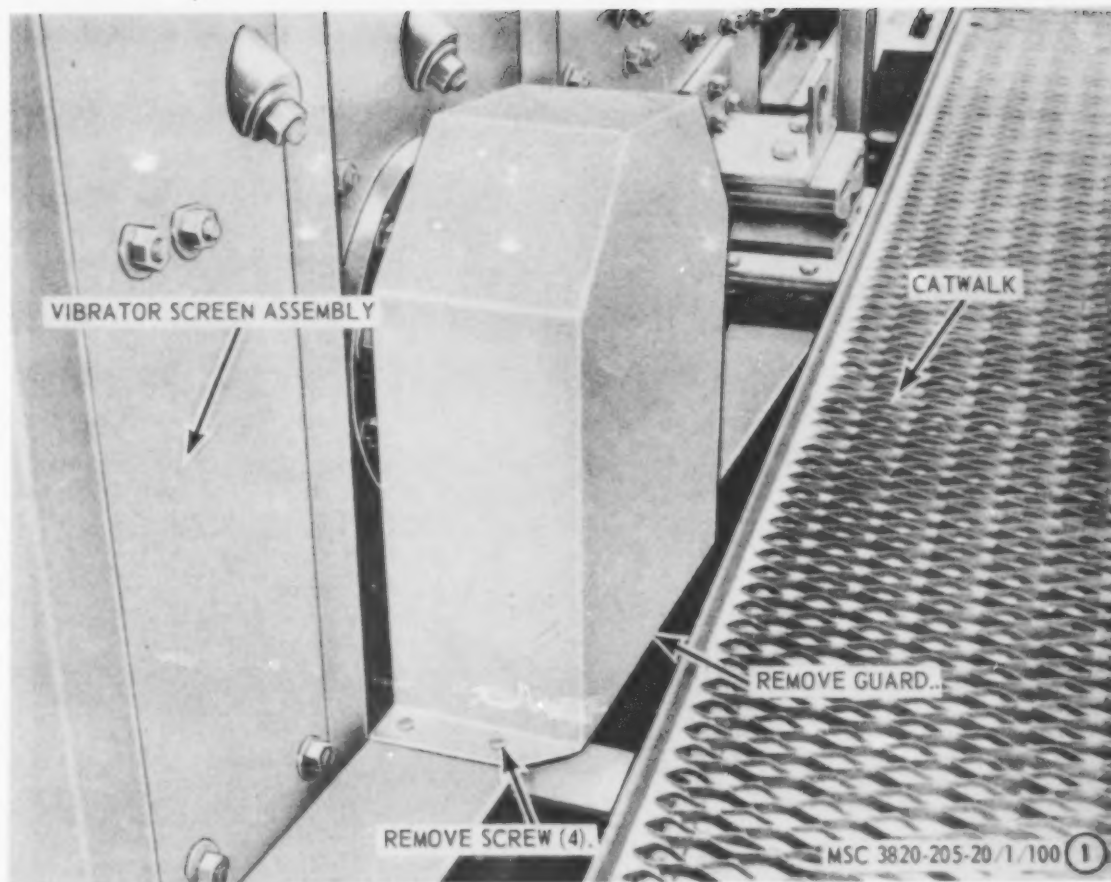


Figure 100. Balance wheel assembly, removal and installation.

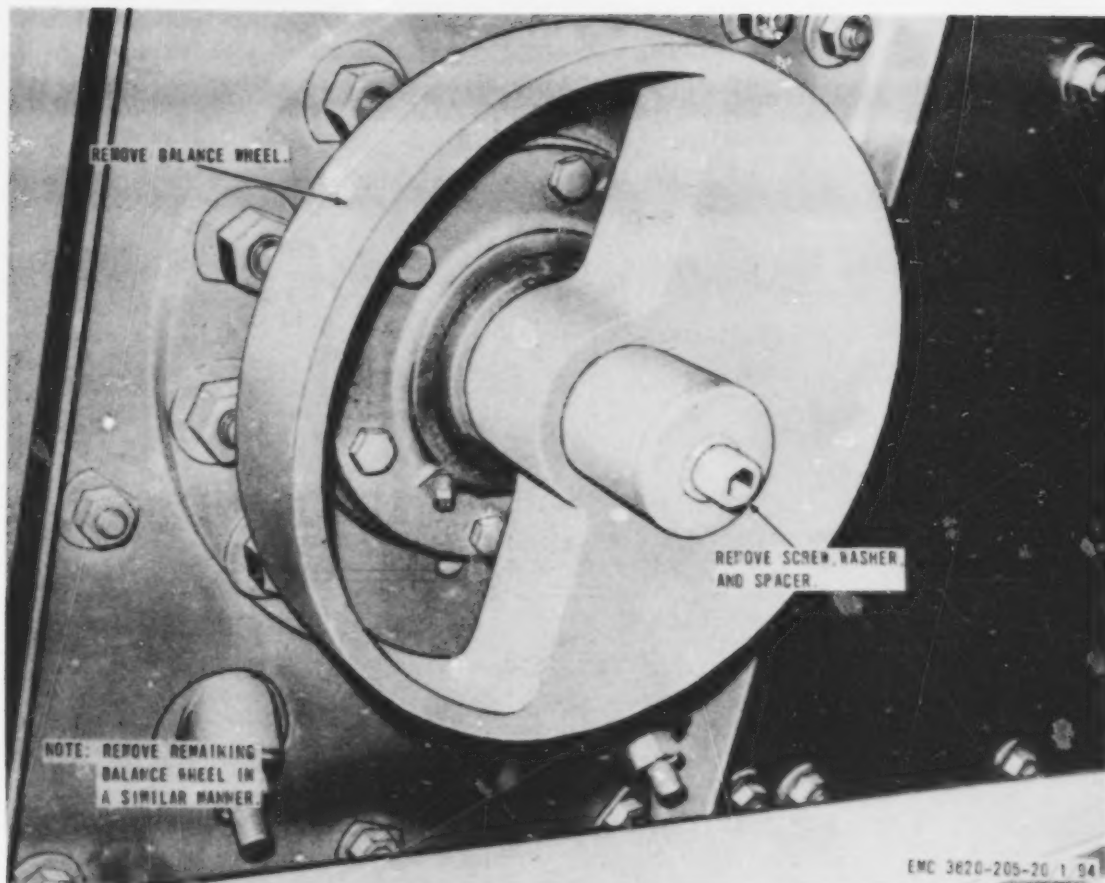


Figure 100—Continued.

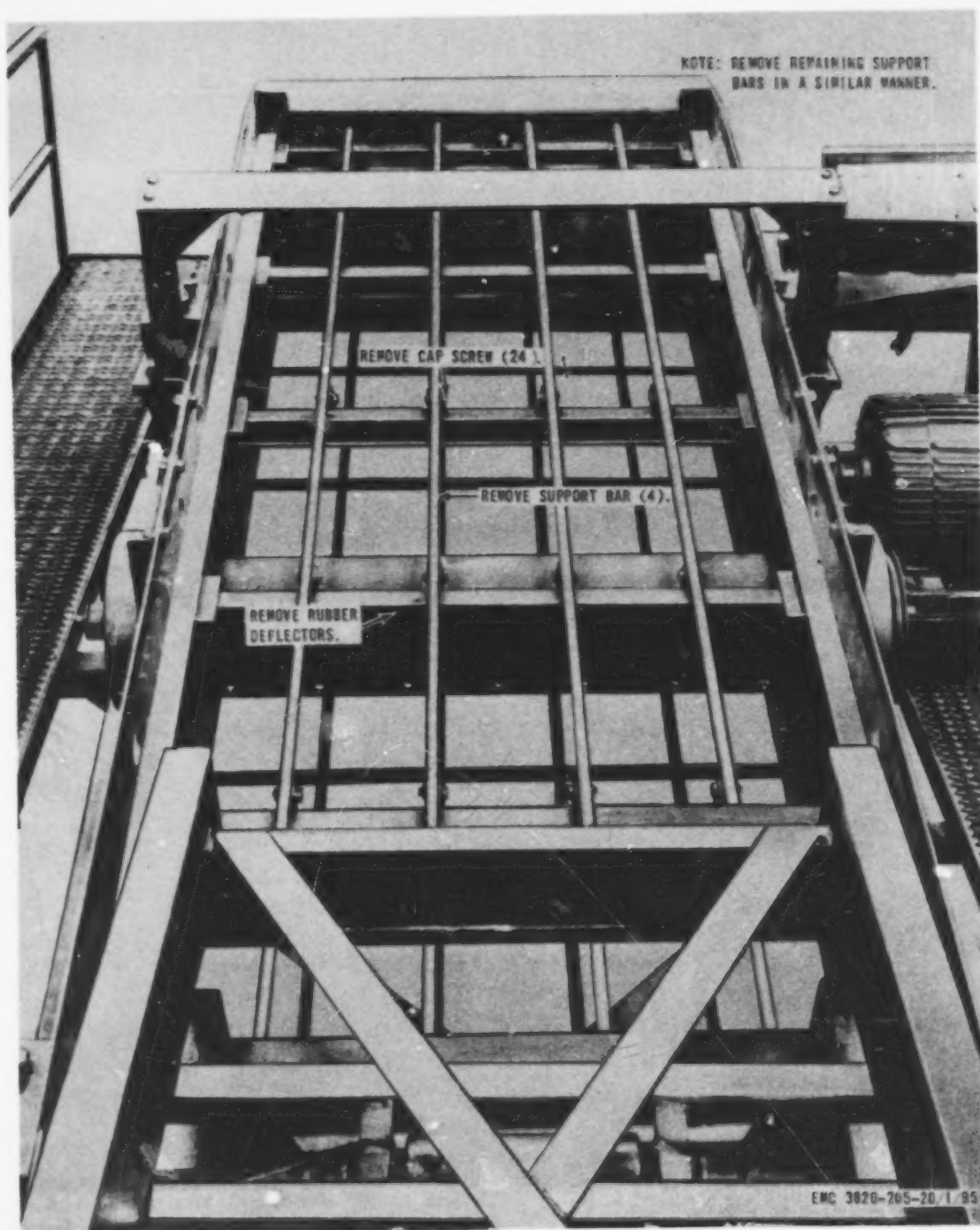


Figure 101. Vibrator screen support bars and rubber deflectors, removal and installation.

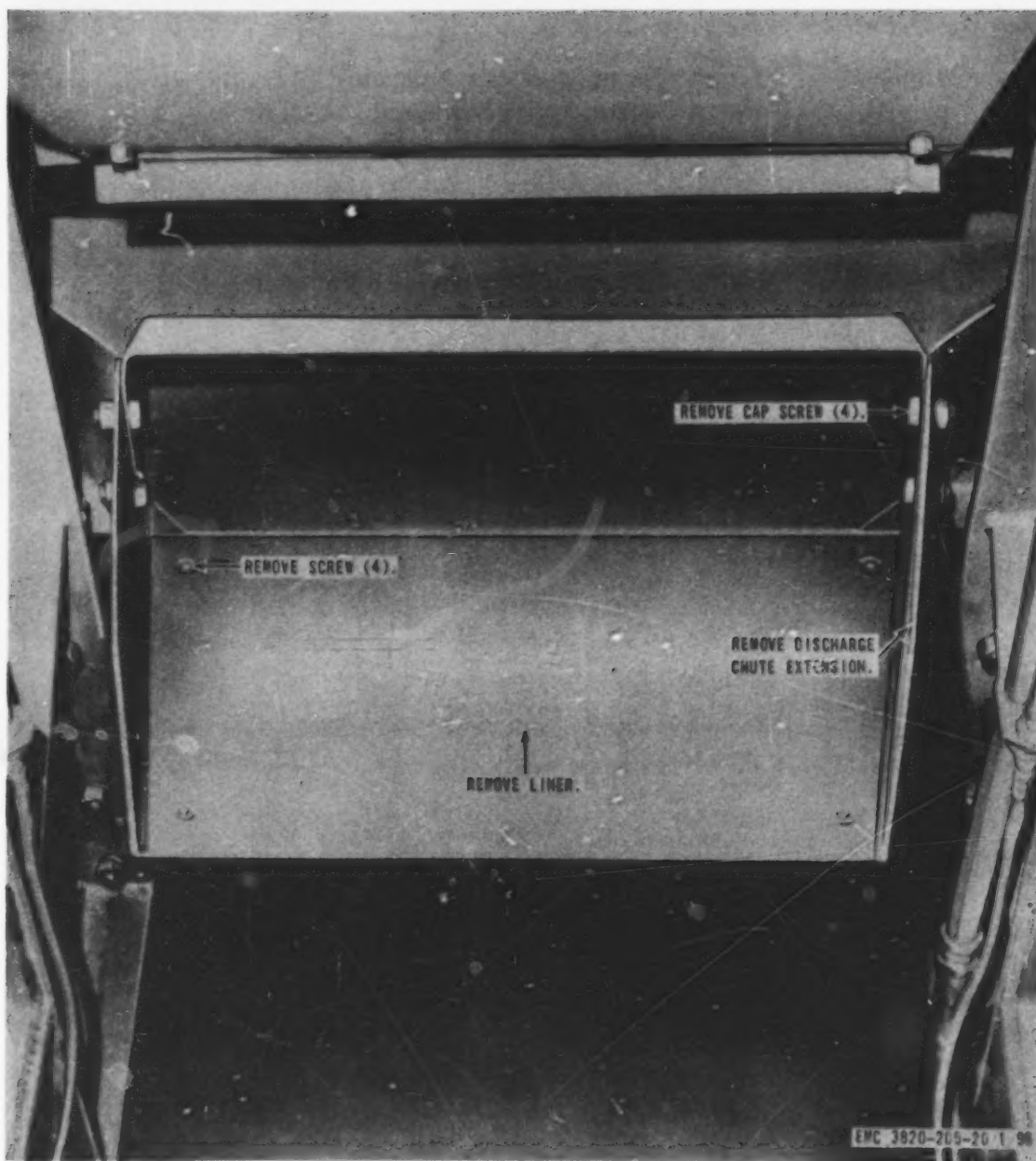


Figure 10E. Discharge chute extension and liner, removal and installation.

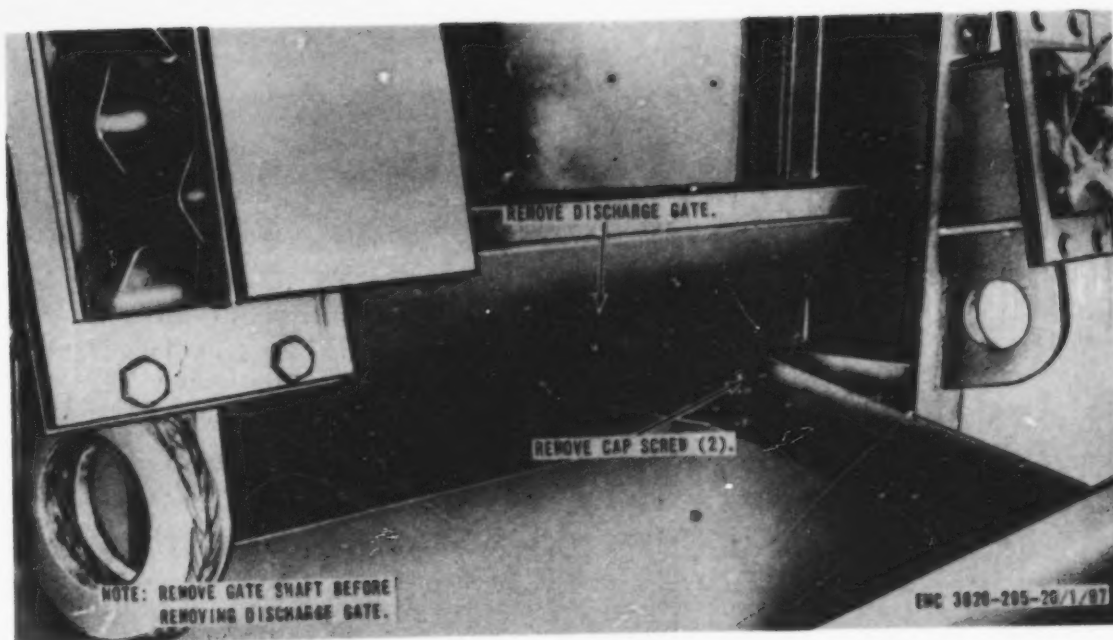


Figure 103. Discharge gate, removal and installation.

- (2) Remove the wheel hub assembly.
- (3) Remove the brakedrum and slinger from the hub as illustrated on figure 112.

b. Cleaning and Inspection.

- (1) Clean and inspect all parts. Replace defective parts.
- (2) For lubrication of wheel bearing refer to paragraph 16.

c. Installation.

- (1) Install the brakedrum and slinger on the hub illustrated on figure 112.
- (2) Install the wheel hub assembly (par. 112).
- (3) Install the wheels (par. 111).

178. Slack Adjuster

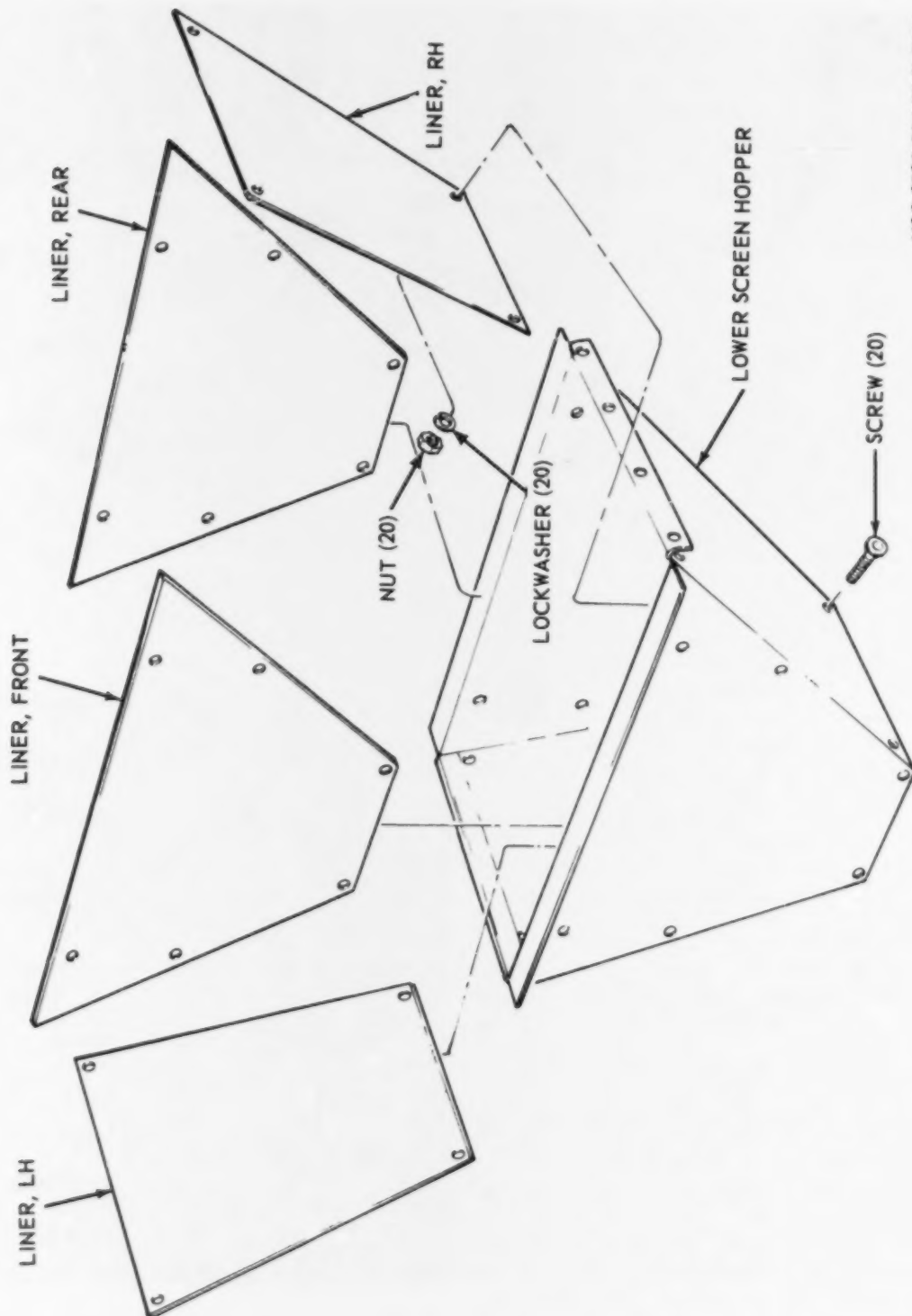
a. Removal.

- (1) Disconnect the linkage from air chamber (par. 132).
- (2) Remove the slack adjuster from the unit as instructed on figure 113.

b. Cleaning and Inspection. Clean and inspect all parts. Replace defective or damaged parts.



Figure 104. Lower screen hopper, removal and installation.



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Figure 105. Lower screen hopper, exploded view.

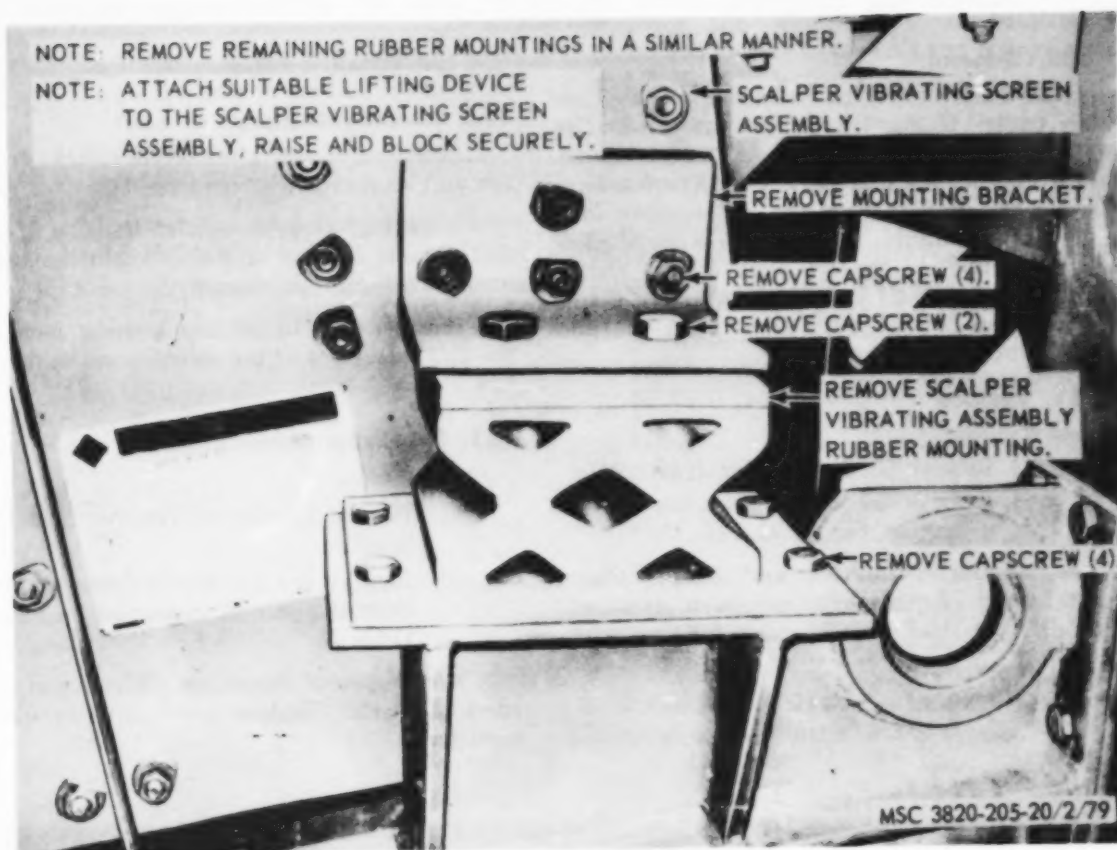


Figure 106. Rubber mountings, removal and installation.

c. Installation.

- (1) Install the slack adjuster on the unit in reverse of the instructions on figure 113.
- (2) Connect linkage to air chamber (par. 132).

d. Adjustment. Adjust the brakes as instructed on figure 113.

179. Brake Assembly

a. Removal.

- (1) Remove the wheel hub assembly and brakedrum (par. 177).

- (2) Remove the brake assembly from the axle as illustrated on figure 112.

b. Cleaning, Inspection, and Repair. Clean and inspect all parts. Replace all damaged or defective parts as necessary.

c. Installation.

- (1) Install the brake assembly on the axle in reverse of the instructions on figure 112.
- (2) Install the hub assembly and brakedrum (par. 177).

d. Adjustment. Adjust the brakes (par. 175).

Section XIII. LEVELING JACKS, TOOLBOX, AND FIRE EXTINGUISHER BRACKET

180. General

The four screw-type jacks are mounted on the trailer frame, two in rear of the trailer wheels and two in front of the trailer wheels in rear of the frame gooseneck. The levelling jacks are used to level the roll crusher unit during operations. The toolbox and bracket are mounted on the left side of the trailer frame behind the long ladder. The fire extinguisher bracket is mounted on the right side of the vibrator screen frame.

181. Toolbox

a. Removal.

- (1) Remove the long ladder (par. 172).
- (2) Remove the toolbox from the unit as instructed on figure 114.

b. *Cleaning, Inspection, and Repair.* Clean and inspect. Replace or repair worn, damaged, or defective toolbox as necessary.

c. Installation.

- (1) Install the toolbox on the unit in reverse of the instructions on figure 114.

- (2) Install the long ladder (par. 172).

182. Leveling Jacks

a. *Removal.* Remove the leveling jacks from the unit as instructed on figure 115.

b. *Cleaning, Inspection, and Repair.* Clean and inspect. Replace or repair worn, damaged, or defective jack as necessary.

c. *Installation.* Install the leveling jack on the unit in reverse of the instructions on figure 115.

183. Fire Extinguisher Bracket

a. Removal.

- (1) Remove the fire extinguisher from the bracket.
- (2) Remove the fire extinguisher bracket from the unit as instructed on figure 116.

b. *Cleaning and Inspection.* Clean and inspect all parts. Replace a defective or damaged part.

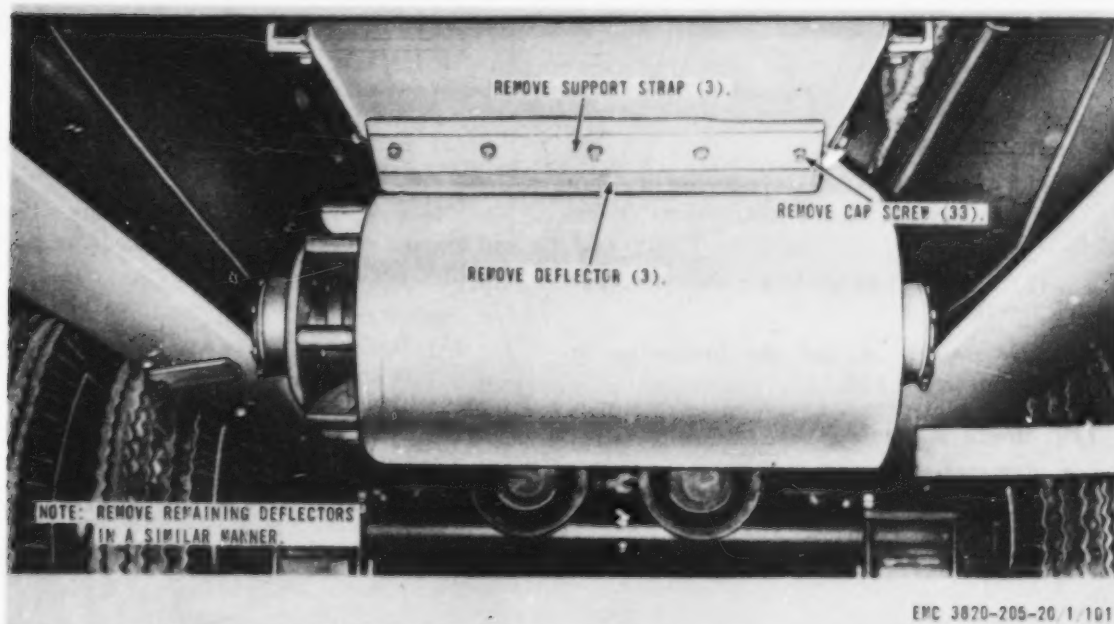


Figure 107. Rubber deflectors, removal and installation.

c. Installation.

- (1) Install the fire extinguisher bracket on the unit in reverse of the instructions on figure 116.
- (2) Install the fire extinguisher (TM 5-3820-205-10/1).

184. Identification and Instruction Plates and Holders

a. Removal. Remove the necessary hardware

securing the identification and instruction plates and holders to the unit and remove plates and holders.

b. Cleaning, Inspection, and Repair. Clean with approved cleaning solvent and dry thoroughly. Replace defective plates.

c. Installation. Install identification and instruction plates and holders on the unit and secure with necessary hardware.

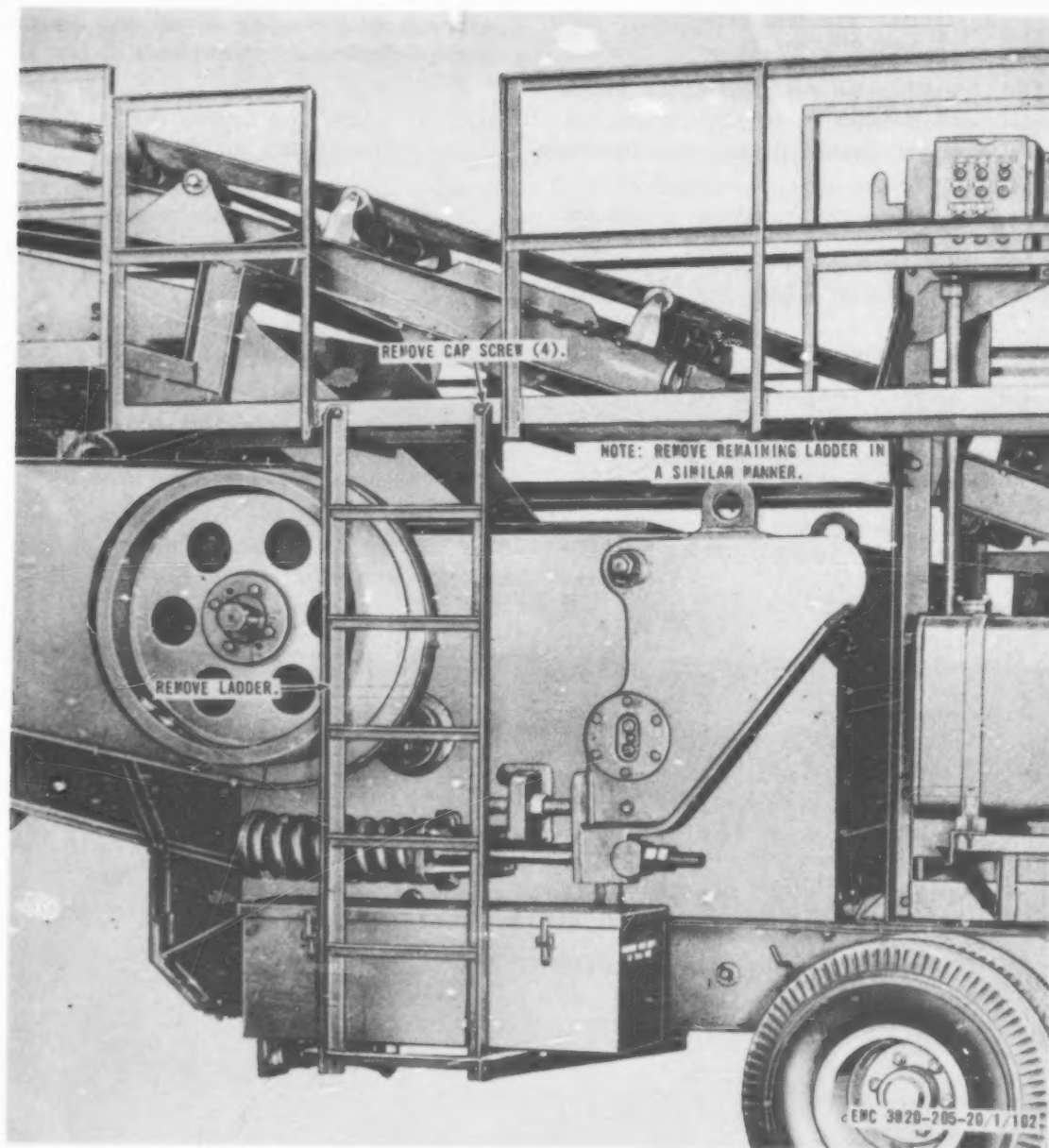


Figure 108. Ladder assemblies, removal and installation.

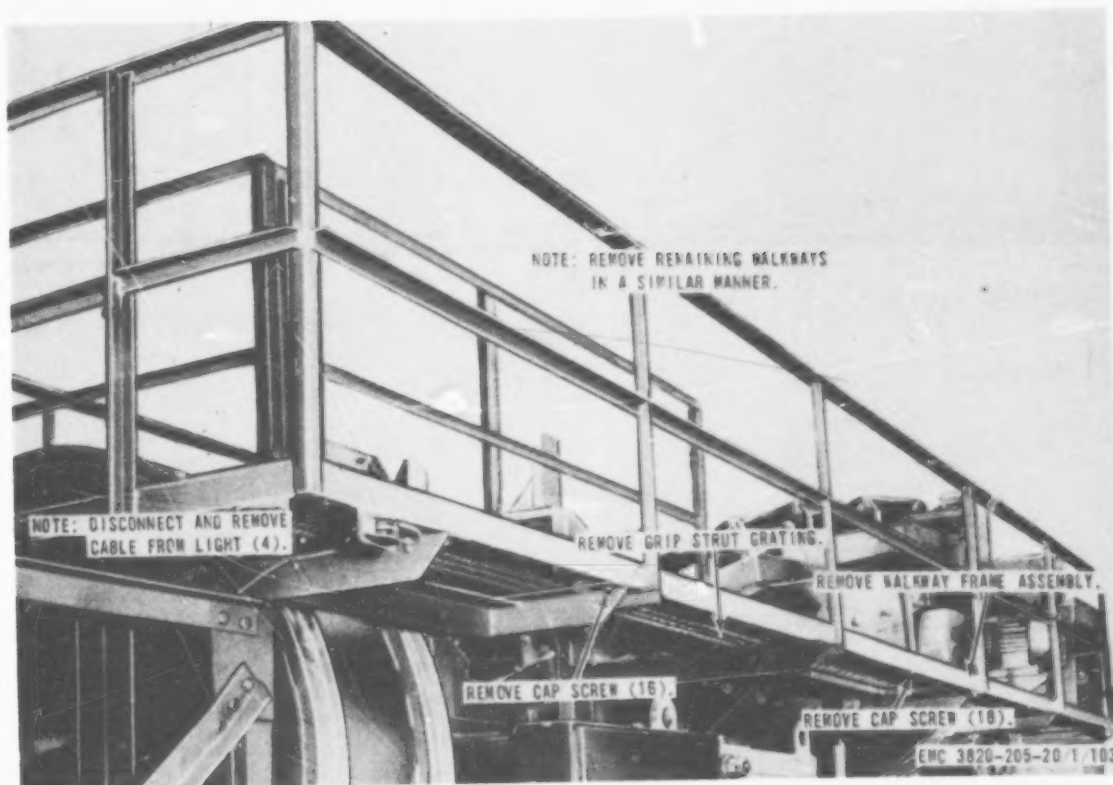
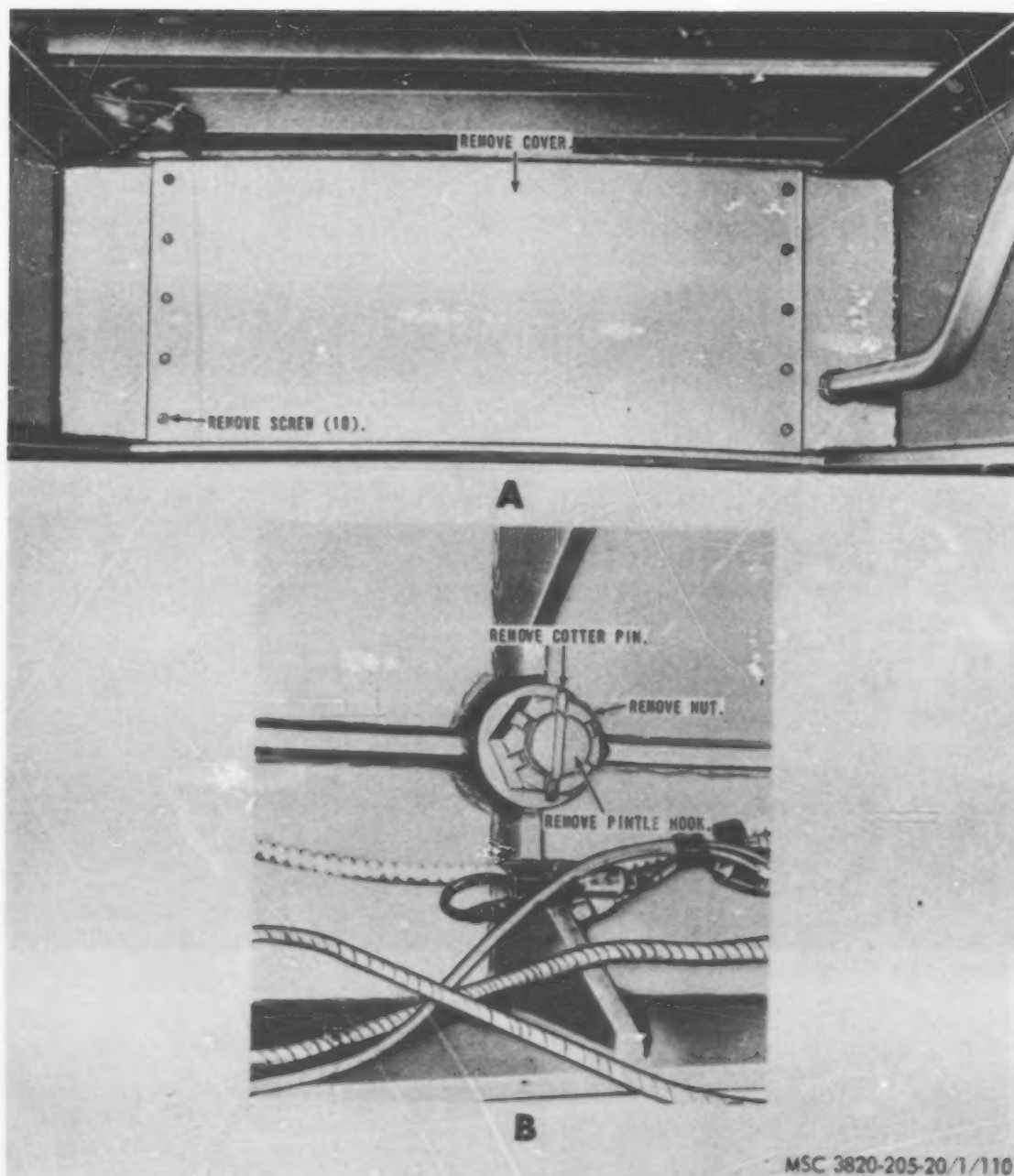


Figure 109. Walkway assembly, removal and installation.

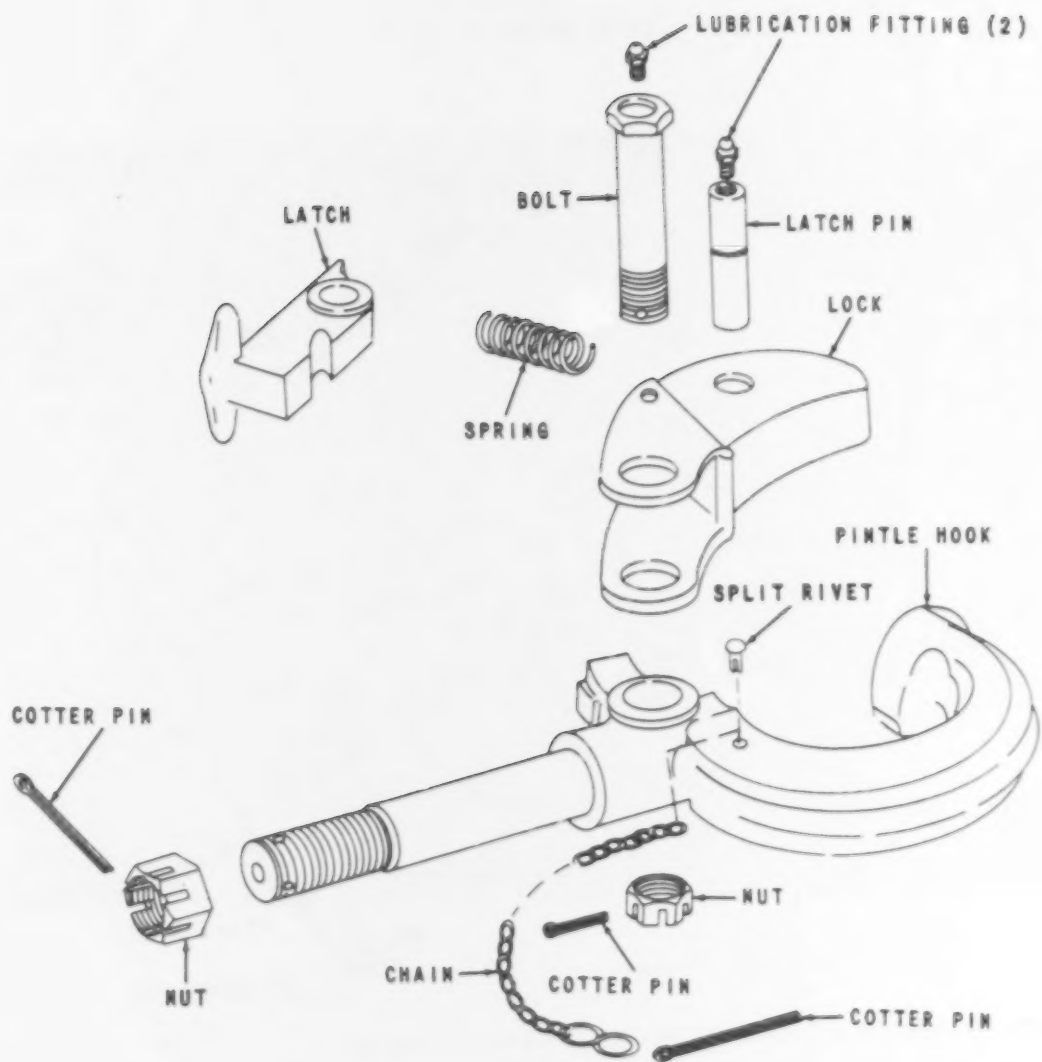


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A—Cover plate installed

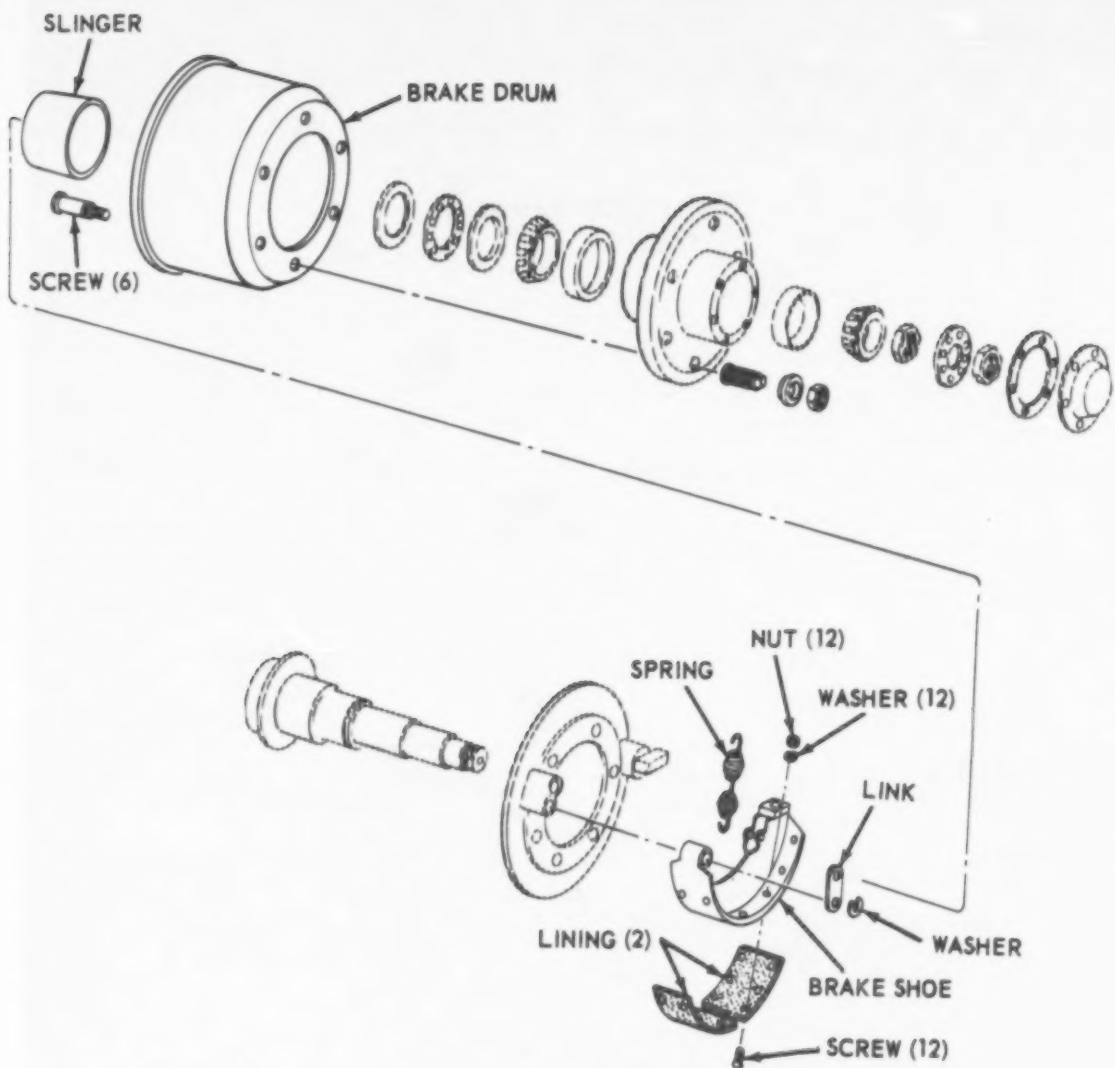
B—Pintle hook installed

Figure 110. Pintle hook assembly, removal and installation.



EMC 3820-205-20/2/94

Figure 111. Pintle hook, exploded view.



NOTE: DISASSEMBLE REMAINING BRAKES IN A SIMILAR MANNER.

MSC 3820-205-20/1/112

Figure 118. Brake assembly, exploded view.

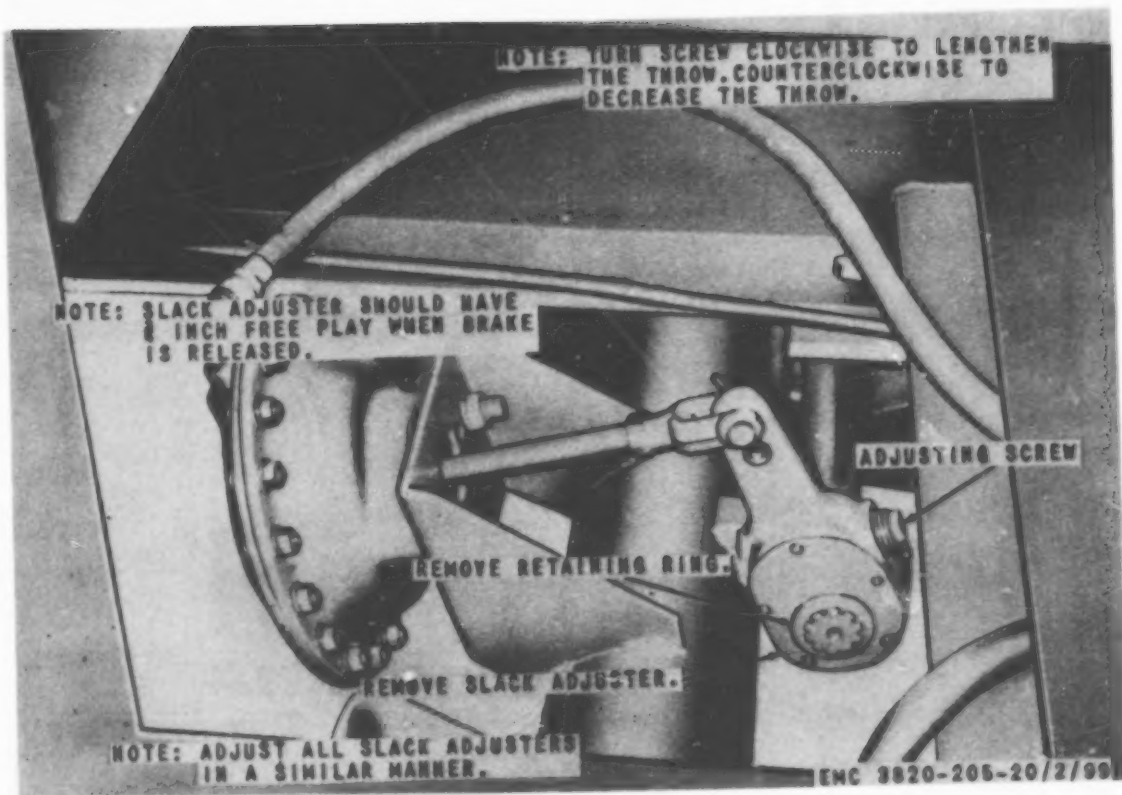


Figure 113. Slack adjuster, removal, installation, and adjustment.

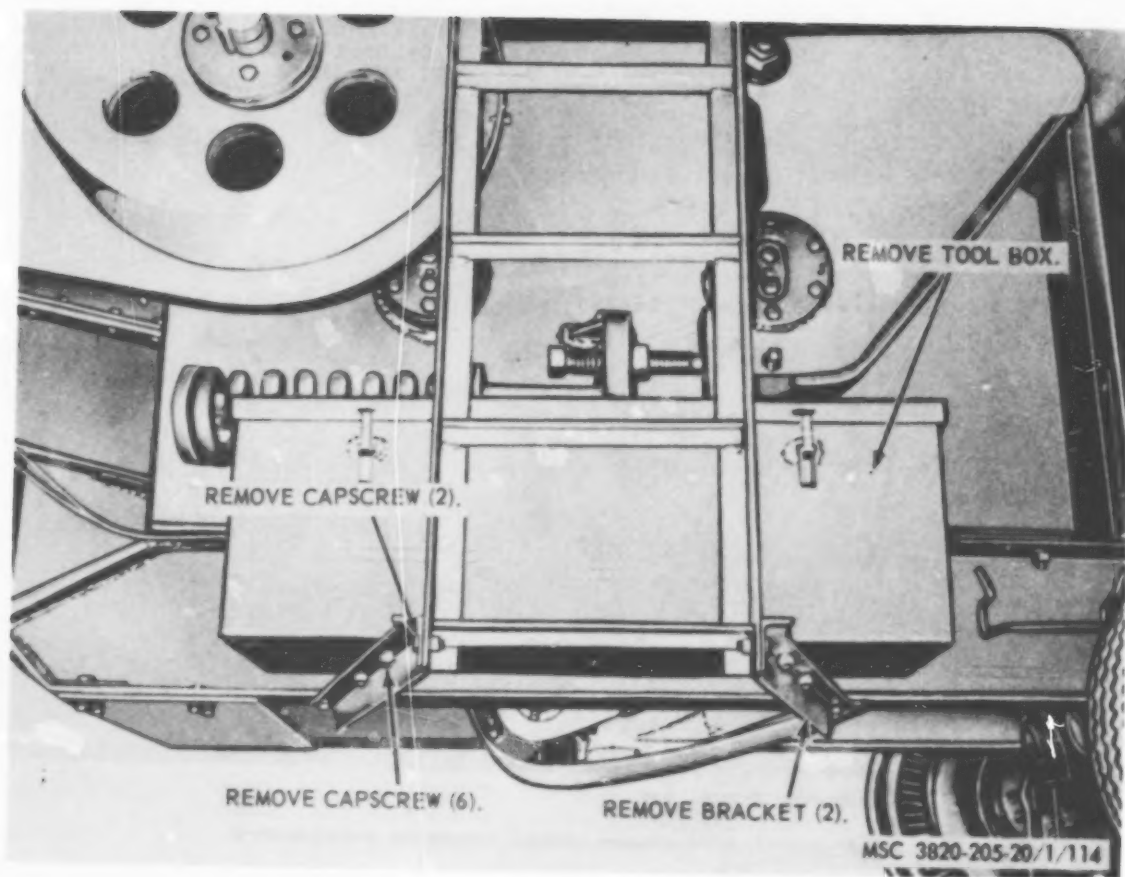


Figure 114. Toolbox, removal and installation.

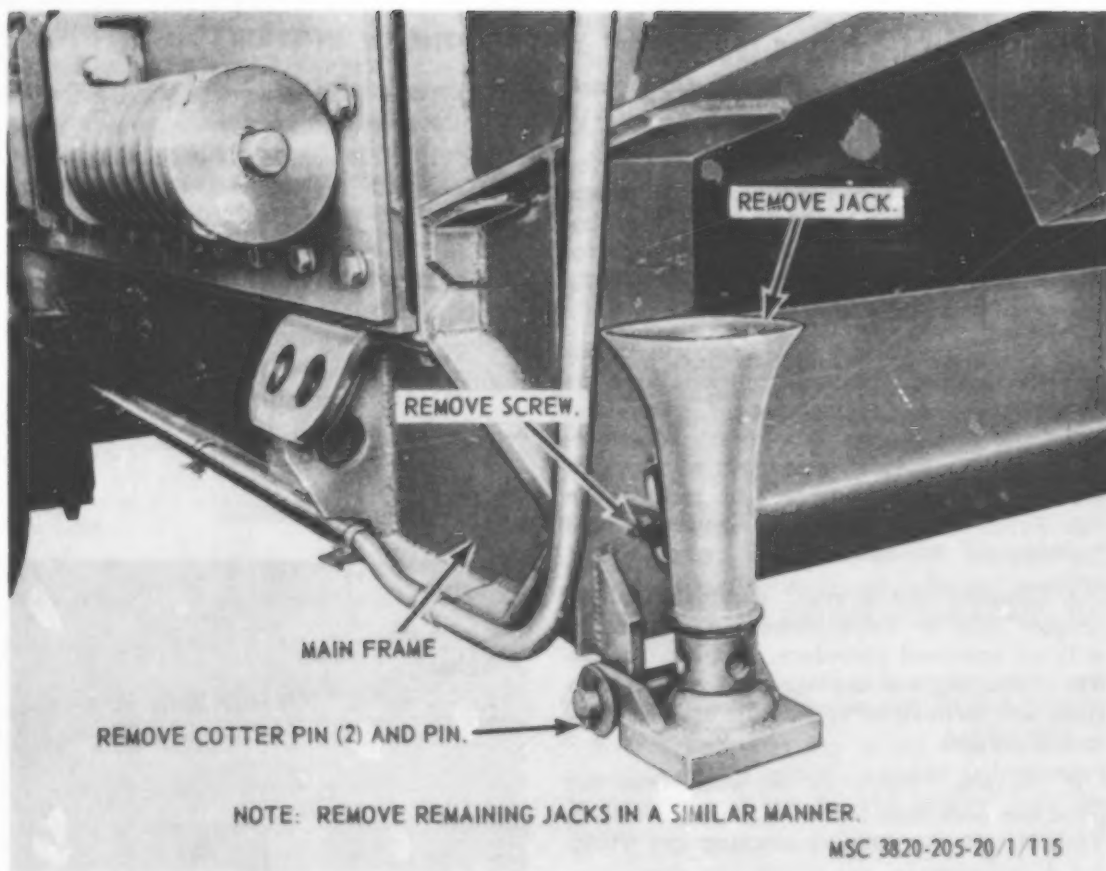


Figure 115. Leveling jacks, removal and installation.

CHAPTER 7

SHIPMENT AND LIMITED STORAGE

Section I. SHIPMENT WITHIN ZONE OF INTERIOR

185. Preparation of Roll Crusher for Shipment

a. *General.* Detailed instructions for the preparation of the roll crusher for domestic shipment are outlined within this paragraph. Preservation will be accomplished in sequence that will not require the operation of previously preserved components.

b. *Inspection.* The roll crusher will be inspected for any unusual conditions such as damage, rusting, accumulation of water, and pilferage. Inspection will be completed as outlined on the quarterly preventive maintenance services. All deficiencies will be recorded on DA Form 2404 (Equipment Inspection and Maintenance Worksheet).

c. *Cleaning and Drying.* Cleaning the roll crusher will be accomplished in accordance with an approved procedure. Approved methods of cleaning and drying, types of preservatives, and methods of application are described in TM 38-230.

d. *Painting.* Paint all surfaces when the paint has been removed or damaged. Refer to TB ENG 60 for detailed cleaning and painting instructions.

e. *Depreservation Guide.* DA Form 2258 (Depreservation Guide of Engineer Equipment). A properly annotated depreservation guide will be completed concurrently with preservation for each item of mechanical equipment with any peculiar requirements outlined in blank spaces 27 through 33. The completed depreservation guide will be placed in a waterproof envelope, marked "Depreservation Guide," and fastened in a conspicuous location on or near the operator's control.

f. Cooling System.

- (1) Check the cooling system to determine

the level and protection of the anti-freeze coolant.

- (2) If the solution is clean and checks at -25°F. , it is not necessary to drain and clean the system.
- (3) If the level of coolant is low, add a mixture of 50 percent water and 50 percent antifreeze conforming to Specification O-A-548 type 1, until coolant reaches proper level.
- (4) If temperatures below -25°F. are expected, drain the cooling system and fill it with antifreeze conforming to Specification MIL-C-11775 in its undiluted condition.

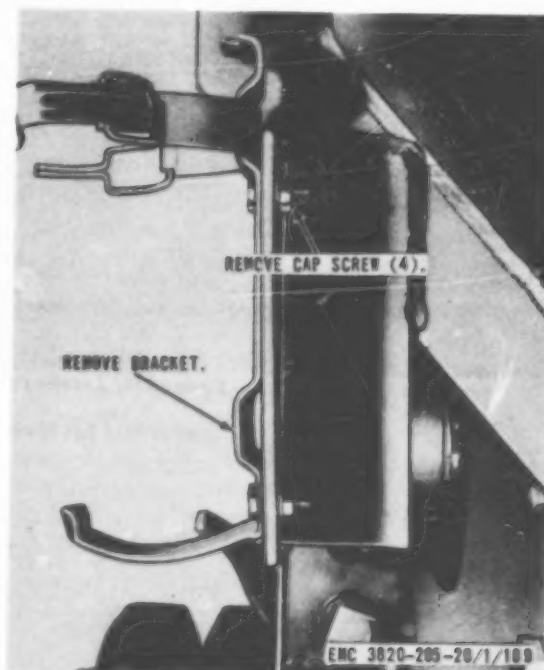


Figure 116. Fire extinguisher bracket, removal and installation.

- (5) If the cooling system is contaminated, drain and clean the cooling system as outlined in TB ENG 60. Fill with antifreeze solution described in (3) above.

g. Lubrication System. Check level of lubricant. Operate the engine and compressor at fast idle until lubricant has been circulated throughout the system.

h. Sealing of Openings. Openings that will permit the direct entry of water into the interior of engine, accessories, controls, etc., will be sealed with type III, class 1, pressure-sensitive tape conforming to Specification PPP-T-60.

i. Fuel Tank Mobile. If the fuel tank is empty, it will be fogged with type P-10, grade 2 engine preservation oil conforming to MIL-L-21260. It is not required to drain the fuel tank for domestic shipment.

j. Air Cleaner. Clean the air cleaner and seal all openings that permit the direct entry of water. Use type III, class 1, waterproof, pressure-sensitive adhesive tape conforming to PPP-T-60.

k. Exterior Surfaces. Coat exposed, machined, ferrous metal surfaces with preservative (P-6) conforming with Specification MIL-C-11796, class 3. If preservative is not available, automotive and artillery grease (GAA) as specified on the lubrication order may be used.

l. Marking. Will conform to MIL-STD-129.

m. Batteries and Cables. Batteries will be secured in the battery compartment. Battery will be filled and fully charged. Cables will be disconnected and secured, in a manner that will prevent their contact with the terminals, with twine or type III, class 1, pressure-sensitive tape conforming to Specification PPP-T-60.

n. Pneumatic Tires. Tires will be inflated to 100 psi.

o. Air Receivers. Remove the fitting from tanks and spray the tank interior with type P-10, grade 2, engine preservative oil conforming to MIL-L-21260 and reinstall. Open draincock to allow excess preservative oil to drain. Leave draincock open to allow condensation to drain.

2. Disassembly, Disassembled Parts, Basic Issue Items.

- (1) Disassembly will be limited to the removal of parts and projecting components that tend to increase the overall profile of the equipment and that which is subject to pilferage.
- (2) Basic issue items and disassembled components will be packed with the publications in the toolbox if possible. Otherwise, items will be packed in a suitable container and secured to the equipment to prevent loss or pilferage. Refer to TM 38-230 for guidance in selection and container fabrication.

186. Loading Roll Crusher for Shipment

a. Use a lifting device of sufficient capacity and hoist the Roll Crusher on the flatcar. Refer to figure 2.

Notes. Spreader bars should be used to keep hoist cables from coming in contact with the Roll Crusher.

b. If a lifting device is not available, construct a ramp of suitable material as instructed on figure 3 and tow the roll crusher onto the flatcar.

c. Block and secure the roll crusher to the flatcar as illustrated on figure 4.

d. For over-the-road shipment, determine road and bridge limitations and display warning flags. Be sure all stop, clearance, and tail-lights are in working order.

Section II. LIMITED STORAGE

187. Preparation of Roll Crusher for Storage

a. General. Detailed instructions for preserving and maintaining the roll crusher in

limited storage are outlined in this paragraph. Limited storage is defined as storage not to exceed 6 months. Refer to AR 743-505.

b. Inspection. Refer to paragraph 185b.

c. *Cleaning and Drying*. Refer to paragraph 185c.

d. *Painting*. Refer to paragraph 185d.

e. *Depreservation Guide*. Refer to paragraph 185e.

f. *Cooling System*. Refer to paragraph 185f.

g. *Lubrication System*. Refer to paragraph 185g.

h. *Sealing of Openings*. Refer to paragraph 185h.

i. *Fuel Tank, Mobile*. Tanks will be drained and sprayed or fogged with type P-10, grade 2, engine preservative oil MIL-L-21260.

j. *Exterior Surfaces*. Refer to paragraph 185k.

k. *Batteries and Cables*. Refer to paragraph 185m.

l. *Pneumatic Tires*. Pneumatic tires standing in storage under load will be inflated to 100 psi. When the equipment is blocked and all weight is removed from the tires, deflate tires to two-thirds normal tire pressure.

m. *Air Receivers*. Refer to paragraph 185o.

n. *Disassembly, Disassembled Parts, Basic Issue Items*.

(1) Disassembly normally is not neces-

sary for storage; disassembly will be limited to removal of parts that interfere with storage or may be subject to damage or pilferage.

(2) Store basic issue items and disassembled components subject to damage or pilferage in the toolbox. Otherwise, pack the items in a suitable container and place with the lubrication and servicing unit to prevent loss or pilferage.

o. *Weatherproofing*. When covered storage is not available, select a firm, level, well-drained storage location protected from prevailing winds. Position the equipment on heavy planking or other solid surfaces. Block the equipment in a manner to remove all weight from tires. Cover the equipment with a tarpaulin or other suitable waterproof covering and tie down securely.

188. Inspection and Maintenance of Roll Crusher in Storage

When the roll crusher has been placed in limited storage all scheduled preventive maintenance services, including inspection, will be suspended. Refer to AR 743-505. Inspect the roll crusher as outlined in paragraph 185b. Operate it long enough to reach operating temperature and completely lubricate all bearings, gears, and the like. Represerve the roll crusher after operation as outlined in paragraph 187.

APPENDIX I

REFERENCES

1. Dictionaries of Terms and Abbreviations

- AR 320-5 Dictionary of United States Army Terms.
AR 320-50 Authorized Abbreviations and Brevity Codes.

2. Fire Protection

- TM 5-687 Repairs and Utilities: Fire Protection Equipment and Appliances; Inspections, Operations, and Preventive Maintenance.
TM 9-1799 Ordnance Maintenance: Fire Extinguishers.

3. Lubrication

- LO 5-3820-205-20/1 Lubrication Order, Crusher, Roll; Diesel and Electric Driven.

4. Operating Instructions

- TM 5-3820-205-10/1 Operator's Manual, Crusher, Roll.

5. Painting and Preservation

- TB ENG 60 Preservation and Painting of Serviceable Corps of Engineers Equipment.

6. Preventive Maintenance

- TM 9-207 Operation and Maintenance of Ordnance Materiel in Extreme Cold Weather (0° to -65° F.).
TM 9-1870-1 Care and Maintenance of Pneumatic Tires.
TM 9-6140-200-15 Storage Batteries, Lead-Acid Type.
TM 9-8627 Electrical Equipment (Delco-Remy).
TM 38-750 The Army Equipment Records System and Procedures.

7. Publication Indexes

- DA Pam 108-1 Index of Army Motion Pictures, Film Strips, Slides, and Phonorecordings.
DA Pam 310-1 Index of Administrative Publications.
DA Pam 310-2 Index of Blank Forms.
DA Pam 310-3 Index of Doctrinal, Training and Organizational Publications.
DA Pam 310-4 Index of Technical Manuals, Technical Bulletins, Supply Manuals (types 4, 6, 7, 8, and 9), Supply Bulletins, Lubrication Orders, and Modification Work Orders.
DA Pam 310-5 Index of Graphic Training Aids and Devices.
DA Pam 310-25 Index of Supply Manuals—Engineers Type Items.

8. Radio Interference Suppression

- TM 11-483 Radio Interference Suppression.

9. Shipment and Limited Storage

AR 743-505	Storage and Supplies and Equipment, Limited Storage of Engineers Mechanical Equipment.
TM 38-230	Preservation, Packaging, and Packing of Military Supplies and Equipment.

10. Supply Publications

SM10-C9100-SL	Petroleum, Petroleum-Base Products and Related Material.
TM 5-3820-205-20P/1	Organizational Maintenance Repair Parts and Special Tool Lists: Crusher, Roll.

11. Training Aids

FM 5-25	Explosives and Demolitions.
FM 21-5	Military Training.
FM 21-6	Techniques of Military Instruction.
FM 21-30	Military Symbols.

APPENDIX II

MAINTENANCE ALLOCATION

Section I. INTRODUCTION

1. General

This section contains explanations of all maintenance and repair functions authorized for the various echelons. Section II contains the maintenance allocation chart.

2. Maintenance

Maintenance is any action taken to keep materiel in a serviceable condition or to restore it to serviceability when it is unserviceable. Maintenance of materiel includes the following:

a. Service. To clean, preserve, and replenish fuel and lubricants.

b. Adjust. To regulate periodically to prevent malfunction.

c. Inspect. To verify serviceability and detect incipient electrical or mechanical failure by scrutiny.

d. Test. To verify serviceability and detect incipient electrical or mechanical failure by use of special equipment such as gages, meters, and the like.

e. Replace. To substitute serviceable assemblies, subassemblies, and parts for unserviceable components.

f. Repair. To restore an item to serviceable condition through correction of a specific failure or unserviceable condition. This function includes, but is not limited to, inspecting, cleaning, preserving, adjusting, replacing, welding, riveting, and straightening.

g. Aline. To adjust two or more components of an electrical system so that their functions are properly synchronized.

h. Calibrate. To determine, check, or rectify the graduation of an instrument, weapon or weapons system, or components of a weapons system.

i. Overhaul. To restore an item to completely serviceable condition as prescribed by serviceability standards developed. This is accomplished through employment of the techniques of "Inspect and Repair Only as Necessary" (IROAN). Maximum utilization of diagnostic and test equipment is combined with minimum disassembly of the item during the overhaul process.

3. Explanation of Columns

a. Functional Group. The functional group is a numerical group set up on a functional basis. The applicable functional grouping indexes (obtained from the Mobility Command Functional Grouping Indexes) are listed on the maintenance allocation chart in the appropriate numerical sequence. These indexes normally are set up in accordance with their function and proximity to each other.

b. Components and Related Operation. This column contains the functional grouping index heading, subgroup headings, and a brief description of the part starting with the noun name. It also designates the operations to be performed such as service, adjust, inspect, test, replace, repair, and overhaul.

c. Echelons of Maintenance. This column contains the various echelons of maintenance by number designation. An X placed in the appropriate echelon column and in line with an indicated maintenance function authorizes that echelon to perform the function. The X indicates the lowest echelon responsible for performing the function, but does not necessarily indicate repair parts stockage at that level. Higher echelons are authorized to perform the indicated functions of lower echelons.

d. Remarks. This column lists specific maintenance functions, special tools, cross-references, instructions, and the like pertinent to the operation being performed.

Section II. MAINTENANCE ALLOCATION CHART

Functional group	Components and related operation	Echelons of maintenance					Remarks
		1	2	3	4	5	
01	ENGINE.						
0100	Engine Assembly.						
	Engine, diesel:						
	Service	X					
	Inspect	X					
	Test			X			Compression.
	Replace						
	Repair			X			
	Overhaul				X		
0101	Crankcase, Block, Cylinder Head.						
	Cylinder and crankcase assembly:						
	Repair		X				
	Sleeves, cylinder:						
	Replace				X		
	Head, cylinder:						
	Replace			X			
	Repair			X			
0102	Crankshaft.						
	Crankshaft assembly:						
	Replace				X		
	Repair					X	Metalizing, grinding, alining.
	Pulley and damper, vibration:						
	Replace			X			
	Bearings, main:						
	Replace				X		
0103	Flywheel Assembly.						
	Flywheel assembly:						
	Repair				X		Replace ring gear.
0104	Pistons, Connecting Rods.						
	Pistons, rings; pins; retainers; bearings:						
	Replace				X		
	Rods, connecting:						
	Replace				X		
	Repair				X		
0105	Valves, Camshafts and Timing Systems.						
	Valves and seats:						
	Replace				X		
	Repair				X		
	Springs; guides and locks:						
	Replace				X		
	Arms, rocker:						
	Adjust		X				
	Replace			X			
	Repair			X			
	Cover:						
	Replace		X				
	Rods, push:						
	Replace			X			
	Followers, cam; camshaft; bearings; gears; seals; cover:						
	Replace				X		

Section II. MAINTENANCE ALLOCATION CHART—Cont.

Functional group	Components and related operation	Phelons of maintenance					Remarks
		1	2	3	4	5	
0106	Engine Lubrication Systems.						External.
	Pump, oil:						
	Replace				X		
	Repair				X		
	Filter assembly, oil:						
	Service	X					
	Replace		X				
	Cooler, oil:						
	Replace		X				
	Valve, bypass:						
	Replace		X				
	Breather:						
	Service	X					
	Replace		X				
	Pan, oil:						
	Replace				X		
	Lines						
	Replace		X				
	Gage, level:						
	Replace	X					
0107	Engine Starting Systems.						
	Crank, hand:						
	Replace		X				
	Support assembly:						
0108	Manifolds.						
	Manifolds:						
	Replace		X				
02	CLUTCH.						
0200	Clutch Assembly.						
	Clutch assembly:						
	Service	X					
	Adjust	X					
	Repair			X			
	Disks:						
	Replace			X			
	Repair			X			
	Plates:						
	Replace			X			
0202	Clutch Release Mechanism.						
	Shaft, cross; yoke, throwout:				X		
	Replace				X		
	Lever:						
03	FUEL SYSTEM.						
	Fuel injector.						
0301	Injector, fuel:						
	Test		X				
	Replace		X				
	Repair				X		
0302	Fuel Pumps.						
	Injection pump, diesel:				X		
	Replace				X		

Section II. MAINTENANCE ALLOCATION CHART—Cont.

Functional group	Components and related operation	Echelons of maintenance					Remarks
		1	2	3	4	5	
	Repair.....				X		
	Drive, injection pump:						
	Replace.....				X		
	Repair.....				X		
0304	Air Cleaner.						
	Air cleaner assembly:						
	Service.....	X					
	Repair.....		X				
0306	Tanks, Lines, Fittings.						
	Tank, fuel:						
	Service.....	X					
	Replace.....		X				
	Cap, fuel tank:						
	Replace.....		X				
	Lines:						
	Replace.....		X				
	Repair.....		X				
	Fittings:						
	Replace.....		X				
0308	Engine Speed Governor.						
	Governor, engine speed.....						Refer to Group 0302.
0309	Fuel Filters.						
	Filter assembly:						
	Service.....	X					
	Replace.....		X				
0311	Engine Starting Aids.						
	Starting aid, ether:						
	Service.....	X					
	Replace.....		X				
	Lines and fittings:						
	Replace.....		X				
0312	Throttle Controls.						
	Controls, throttle:						
	Replace.....		X				
04	EXHAUST SYSTEM.						
0401	Muffler and Pipes.						
	Muffler and pipes, exhaust:						
	Replace.....		X				
05	COOLING SYSTEM.						
0501	Radiator.						
	Radiator assembly:						
	Service.....	X					
	Inspect.....	X					
	Test.....			X			
	Repair.....			X			
0502	Shroud.						
	Shroud assembly:						
	Replace.....		X				
0503	Headers, Thermostats and Gasket.						
	Thermostat:						

Section II. MAINTENANCE ALLOCATION CHART—Cont.

Functional group	Components and related operation	Echelons of maintenance					Remarks
		1	2	3	4	5	
0504	Test.....		X				
	Replace.....		X				
	Fittings; hoses; clamps; header:						
	Replace.....		X				
	Water Pump.						
	Pump assembly, water:						
0505	Service.....	X					
	Replace.....		X				
	Repair.....			X			
	Fan Assembly.						
	Fan, engine cooling:						
	Replace.....		X				
06	Guard, fan:						
	Replace.....		X				
	Belts, fan:						
	Adjust.....	X					
	Replace.....		X				
	ELECTRICAL SYSTEM.						
0601	Generator.						
	Generator assembly:						
	Test.....		X				
	Replace.....		X				
	Repair.....			X			
	Brushes:						
0602	Replace.....		X				
	Generator Regulator.						
	Regulator, generator:						
	Adjust.....		X				
	Test.....		X				
	Replace.....		X				
0603	Starting Motor.						
	Starter assembly:						
	Service.....	X					
	Test.....		X				
	Replace.....		X				
	Repair.....			X			
0606	Brushes; solenoid:						
	Replace.....		X				
	Engine Safety Controls.						
	Switch, engine safety control:						
	Replace.....		X				
	Governor, overspeed:						
0607	Replace.....		X				
	Repair.....					X	
	Instrument or Engine Control Panel.						
	Gages; switches:						
	Replace.....		X				
	Wiring:						
0608	Repair.....		X				
	Miscellaneous Items.						
	Receptacle, battery charging:						
	Replace.....		X				

Section II. MAINTENANCE ALLOCATION CHART—Cont.

Functional group	Components and related operation	Echelons of maintenance					Remarks
		1	2	3	4	5	
0609	Lights.						
	Lamps; doors; lens; lights:						
	Replace.....		X				
0610	Sending Units.						
	Sending units:						
	Replace.....		X				
0612	Batteries.						
	Batteries:						
	Service.....	X					
	Test.....		X				
	Replace.....		X				
	Box; cables:						
	Repair.....		X				
0613	Hull or Chassis Wiring Harness.						
	Wiring, chassis:						
	Repair.....		X				
	Coupling, trailer electrical:						
	Replace.....		X				
	Repair.....		X				
0615	Radio Interference Suppression:						
	Components:						
	Test.....		X				
	Replace.....		X				
10	FRONT AXLE.						
1000	Front Axle Assembly.						
	Dolly; drawbar; lunette:						
	Replace.....		X				
	Axle; frame:						
	Replace.....			X			
11	REAR AXLE.						
1100	Rear Axle Assembly.						
	Axle assembly, rear:						
	Repair.....			X			
1108	Walking Beams.						
	Beams, walking:						
	Service.....	X					
	Repair.....				X		
12	BRAKES.						
1202	Service Brakes.						
	Brake assemblies:						
	Repair.....		X				
1206	Mechanical Brake System.						
	Slack adjusters:						
	Service.....	X					
	Adjust.....		X				
	Replace.....		X				
1208	Air Brake System.						
	Hose and Fittings:						
	Replace.....		X				

Section II. MAINTENANCE ALLOCATION CHART—Cont.

Functional group	Components and related operation	Echelons of maintenance					Remarks
		1	2	3	4	5	
	Lines:						
	Replace		X				
	Repair		X				
	Chambers, air:						
	Replace		X				
	Repair			X			
	Valve, relay:						
	Replace		X				
	Repair			X			
	Filters, air:						
	Service	X					
	Replace		X				
	Reservoir, air:						
	Service	X					
	Replace		X				
13	WHEELS.						
1311	Wheel Assembly.						
	Wheel assemblies:						
	Service		X				
	Repair		X				
1313	Tires, Tubes.						
	Tires:						
	Service	X					
	Replace		X				
	Tubes:						
	Replace		X				
	Repair		X				
15	FRAME, TOWING ATTACHMENTS.						
1501	Frame Assembly.						
	Frame assembly:						
	Replace				X		
	Platforms; ladders:						
	Replace		X				
1503	Pintles.						
	Hooks, Pintle:						
	Service	X					
	Repair		X				
1506	Fifth Wheel.						
	Fifth wheel assembly:						
	Service	X					
	Repair		X				
1507	Leveling Jacks.						
	Jacks, leveling:						
	Service	X					
	Replace		X				
18	HOOD.						
1801	Hood.						
	Housing assembly:						
	Replace		X				
	Repair		X				

Section II. MAINTENANCE ALLOCATION CHART—Cont.

Functional group	Components and related operation	Echelons of maintenance					Remarks
		1	2	3	4	5	
1808	Boxes, Cable Reels. Box, tool: Replace.....		X				
	Reel, power cable: Repair.....		X				
22	ACCESSORY ITEMS.						
2202	Accessory Items. Reflectors: Replace.....		X				
	Cables and hose: Replace.....	X					
2210	Data Plates and Instruction Holders. Plates, data: Replace.....			X			
	Plates, identification and instruction; holder, instruction: Replace.....		X				
31	BASIC ISSUE ITEMS, MANUFACTURER INSTALLED.						
3100	Basic Issue Items, Manufacturer or Depot Installed. Accessories: Replace.....	X					
32	BASIC ISSUE ITEMS TROOP INSTALLED.						
3200	Basic Issue Items Troop Installed or Authorized. Accessories; common tools; publications: Replace.....	X					
40	ELECTRIC MOTORS.						
4000	Motor Assembly: Motor assemblies: Service..... Replace..... Repair..... Overhaul.....	X	X	X	X		
4001	Rotor Assemblies. Rotor: Replace.....			X			
4002	Stator Assemblies. Stator assemblies: Replace..... Repair.....			X	X		
4004	Ventilating System. Guard, dust: Replace..... Fan, cooling: Replace.....		X	X			
4005	Frame Supports and Housings. End assembly; frame, center: Replace.....			X			

Section II. MAINTENANCE ALLOCATION CHART—Cont.

Functional group	Components and related operation	Echelons of maintenance					Remarks
		1	2	3	4	5	
	Repair			X			
	Box, junction:						
	Replace		X				
4007	Drive Components.						
	Pulley:						
	Replace		X				
	Belts:						
	Adjust	X					
	Replace		X				
4009	Control Panels.						
	Panel, main control:						
	Replace				X		
4010	Master Control Assembly.						
	Starter, magnetic:						
	Replace		X				
	Repair			X			
	Switches, push button, heater:						
	Replace		X				
4011	Circuit Breakers.						
	Circuit breakers:						
	Replace			X			
4018	Terminal Blocks.						
	Conduit, power; connectors; receptacle:						
	Replace			X			
	Wiring:						
	Repair		X				
47	GAGES: MEASURING DEVICES.						
4701	Instruments Speed and Distance.						
	Tachometer and hour-meter combination:						
	Replace		X				
	Drive, tachometer:						
	Replace		X				
	Repair		X				
4702	GAGES.						
	Gage, fuel:						
	Replace		X				
75	CRUSHING EQUIPMENT COMPONENTS.						
7501	Belting.						
	Belts, main drive:						
	Adjust		X				
	Replace			X			
	Pulley:						
	Replace			X			
	Guards and attaching parts:						
	Replace			X			
	Conveyor assembly, discharge:						
	Repair		X				
	Frame, conveyor; hopper:						
	Replace			X			
	Belting:						
	Adjust		X				

Section II. MAINTENANCE ALLOCATION CHART—Cont.

Functional group	Components and related operation	Echelons of maintenance					Remarks
		1	2	3	4	5	
7503	Replace.....			X			
	Repair.....			X			
	Wiper assembly:						
	Replace.....		X				
	Repair.....		X				
	Pulleys.						
	Bearings:						
	Service.....	X					
	Replace.....			X			
	Shaft and pulley:						
7504	Replace.....			X			
	Rolls.						
7506	Roller assembly:						
	Repair.....		X				
7508	Shafts.						
	Gear assembly, conveyor drive:						
	Service.....	X					
	Replace.....		X				
	Repair.....			X			
	Pulleys:						
7510	Replace.....		X				
	Elevating Wheel.						
	Wheel, elevating:						
	Repair.....			X			
	Rollers:						
	Service.....	X					
	Replace.....		X				
	Gear assembly:						
	Service.....	X					
	Replace.....		X				
7512	Repair.....			X			
	Pulley and guard:						
	Replace.....		X				
	Feeding Frames.						
	Feeder assembly:						
	Repair.....		X				
	Guards; hopper; chutes:						
	Replace.....		X				
	Frame:						
	Replace.....			X			
7515	Feeding Shafts.						
	Shafts and bearing:						
	Service.....	X					
	Replace.....		X				
	Gear assembly:						
	Service.....	X					
	Replace.....		X				
	Repair.....			X			
	Guard and pulley:						
	Replace.....		X				
7515	Pan Feeder.						
	Feeder, pan:						
	Replace.....		X				
	Shaft; rollers:						

Section II. MAINTENANCE ALLOCATION CHART—Cont.

Functional group	Components and related operation	Echelons of maintenance					Remarks
		1	2	3	4	5	
7520	Service	X					
	Replace		X				
	Crusher Frames.						
	Crusher assembly:						
	Service	X					
	Inspect	X					
	Repair		X				
	Frames, crusher:						
	Replace				X		
	Hopper:						
7522	Replace			X			
	Rolls.						
	Rolls, crusher:						
	Adjust	X					
	Replace				X		
7523	Spring:		X				
	Replace						
7525	Shafts.						
	Shafts; gears; bearings and seals:						
7528	Replace				X		
	Screening Base, Box.						
	Box; plates:						
	Replace				X		
	Rubber, mounting; chute; gate:						
	Replace		X				
	Roll, center and crossmember, feed:						
	Replace				X		
	Underhopper; chute; gate:						
	Repair		X				
7529	Replace		X				
	Screens and Attaching Parts.						
	Screens:						
	Replace	X					
	Screen assembly, vibrating:						
76	Replace				X		
	Repair		X				
	Eccentric or Gyrator Shaft.						
	Shaft assembly:						
	Service	X					
	Replace				X		
	Bearings:						
	Replace				X		
	Balance wheel:						
	Replace		X				
7603	Guard:						
	Replace		X				
	FIRE FIGHTING EQUIPMENT.						
7603	Fire Extinguisher.						
	Extinguisher, fire:						
	Service	X					
	Replace	X					

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By Order of the Secretary of the Army:

EARLE G. WHEELER,
General, United States Army,
Chief of Staff.

Official:

J. C. LAMBERT,
Major General, United States Army,
The Adjutant General.

Distribution:

Active Army:

USASA (2)
DCSLOG (1)
ACSI (1)
CNGB (1)
CofEngrs (3)
CSigO (1)
CofT (1)
TSG (1)
USA Maint Bd (1)
USAARTYBD (2)
USAARMBD (2)
USAIB (2)
USARADBD (2)
USAAESWBD (2)
USAAVNBD (2)
USCONARC (3)
USASMCOM (1)
USAMOCOM (2)
OS Maj Comd (5) except
USARJ (10)
USASETAF (2)
MDW (1)

Armies (2)
Corps (2)
USA Corps (1)
Div (2)
Engr Bde (1)
USMA (2)
Svc Colleges (2)
Br Svc Sch (2) except
USAES (100)
Engr Sec, GENDEP
(OS) (10)
Army Dep (2)
Engr Dep (OS) (10)
USA Tml Comd (2)
Army Tml (1)
USAOSA (2)
Engr Dist (2)
Div Engr (2)
Engr Fld Maint Shops (2)
USAERDL (3)
Engr Cen (5)
AMS (3)

Chicago Proc Ofc (13)
USA Mob Spt Cen (36)
ESCO (10)
Fld Comd, DASA (8)
USACOMZEUR (2)
USAREUR Engr Sup
Con Agcy (10)
USAREUR Engr Proc
Cen (2)
MAAG (1)
JBUSMC (1)
Units org under fol TOE:
5-48 (2)
5-114 (2)
5-115 (2)
5-117 (2)
5-237 (5)
5-262 (5)
5-267 (1)
5-278 (5)
5-279 (2)
5-500 (EA, EB) (2)

NG: None.

USAR: Same as active Army except allowance is one copy to each unit.

For explanation of abbreviations used, see AR 320-50.

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Chart Transposed to

End of Volume.

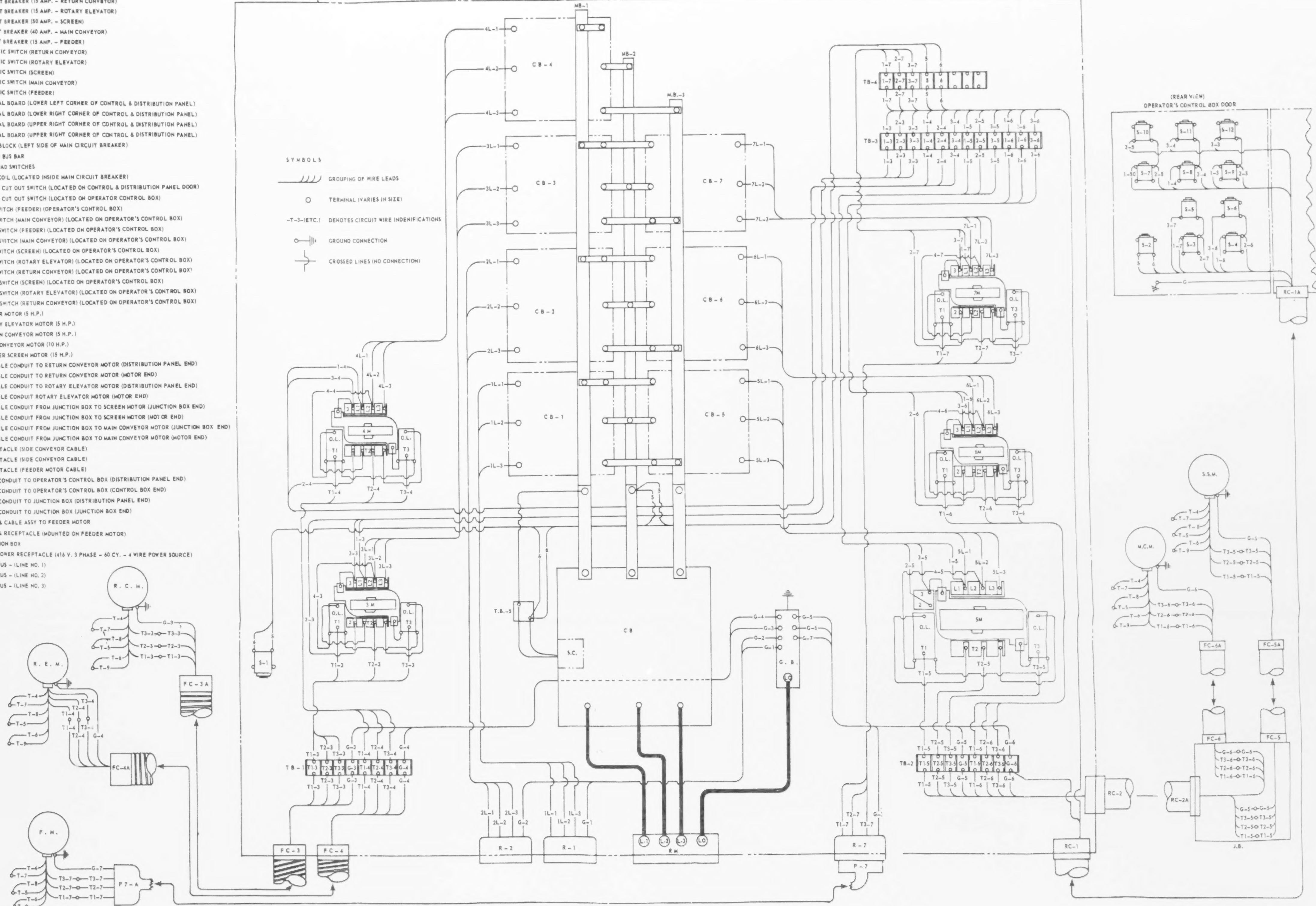
PIN : 025277-000

LEGEND

- C.B. MAIN CIRCUIT BREAKER (225 AMP. NON-AUTO)
- C.B.-1 CIRCUIT BREAKER (40 AMP. - SIDE CONVEYOR)
- C.B.-2 CIRCUIT BREAKER (40 AMP. - SIDE CONVEYOR)
- C.B.-3 CIRCUIT BREAKER (15 AMP. - RETURN CONVEYOR)
- C.B.-4 CIRCUIT BREAKER (15 AMP. - ROTARY ELEVATOR)
- C.B.-5 CIRCUIT BREAKER (30 AMP. - SCREEN)
- C.B.-6 CIRCUIT BREAKER (40 AMP. - MAIN CONVEYOR)
- C.B.-7 CIRCUIT BREAKER (15 AMP. - FEEDER)
- 3-M MAGNETIC SWITCH (RETURN CONVEYOR)
- 4-M MAGNETIC SWITCH (ROTARY ELEVATOR)
- 5-M MAGNETIC SWITCH (SCREEN)
- 6-M MAGNETIC SWITCH (MAIN CONVEYOR)
- 7-M MAGNETIC SWITCH (FEEDER)
- TB-1 TERMINAL BOARD (LOWER LEFT CORNER OF CONTROL & DISTRIBUTION PANEL)
- TB-2 TERMINAL BOARD (LOWER RIGHT CORNER OF CONTROL & DISTRIBUTION PANEL)
- TB-3 TERMINAL BOARD (UPPER RIGHT CORNER OF CONTROL & DISTRIBUTION PANEL)
- TB-4 TERMINAL BOARD (UPPER LEFT CORNER OF CONTROL & DISTRIBUTION PANEL)
- TB-5 RELAY BLOCK (LEFT SIDE OF MAIN CIRCUIT BREAKER)
- GB GROUND BUS BAR
- O.L. OVERLOAD SWITCHES
- S.C. SHUNT COIL (LOCATED INSIDE MAIN CIRCUIT BREAKER)
- S-1 SAFETY CUT OUT SWITCH (LOCATED ON CONTROL & DISTRIBUTION PANEL DOOR)
- S-2 SAFETY CUT OUT SWITCH (LOCATED ON OPERATOR CONTROL BOX)
- S-3 STOP SWITCH (FEEDER) (OPERATOR'S CONTROL BOX)
- S-4 STOP SWITCH (MAIN CONVEYOR) (LOCATED ON OPERATOR'S CONTROL BOX)
- S-5 START SWITCH (FEEDER) (LOCATED ON OPERATOR'S CONTROL BOX)
- S-6 START SWITCH (MAIN CONVEYOR) (LOCATED ON OPERATOR'S CONTROL BOX)
- S-7 STOP SWITCH (SCREEN) (LOCATED ON OPERATOR'S CONTROL BOX)
- S-8 STOP SWITCH (ROTARY ELEVATOR) (LOCATED ON OPERATOR'S CONTROL BOX)
- S-9 STOP SWITCH (RETURN CONVEYOR) (LOCATED ON OPERATOR'S CONTROL BOX)
- S-10 START SWITCH (SCREEN) (LOCATED ON OPERATOR'S CONTROL BOX)
- S-11 START SWITCH (ROTARY ELEVATOR) (LOCATED ON OPERATOR'S CONTROL BOX)
- S-12 START SWITCH (RETURN CONVEYOR) (LOCATED ON OPERATOR'S CONTROL BOX)
- F.M. FEEDER MOTOR (15 H.P.)
- R.E.M. ROTARY ELEVATOR MOTOR (5 H.P.)
- R.C.M. RETURN CONVEYOR MOTOR (5 H.P.)
- M.C.M. MAIN CONVEYOR MOTOR (10 H.P.)
- S.S.M. SCALPER SCREEN MOTOR (15 H.P.)
- FC-3 FLEXIBLE CONDUIT TO RETURN CONVEYOR MOTOR (DISTRIBUTION PANEL END)
- FC-3A FLEXIBLE CONDUIT TO RETURN CONVEYOR MOTOR (MOTOR END)
- FC-4 FLEXIBLE CONDUIT TO ROTARY ELEVATOR MOTOR (DISTRIBUTION PANEL END)
- FC-4A FLEXIBLE CONDUIT TO ROTARY ELEVATOR MOTOR (MOTOR END)
- FC-5 FLEXIBLE CONDUIT FROM JUNCTION BOX TO SCREEN MOTOR (JUNCTION BOX END)
- FC-5A FLEXIBLE CONDUIT FROM JUNCTION BOX TO SCREEN MOTOR (MOTOR END)
- FC-6 FLEXIBLE CONDUIT FROM JUNCTION BOX TO MAIN CONVEYOR MOTOR (JUNCTION BOX END)
- FC-6A FLEXIBLE CONDUIT FROM JUNCTION BOX TO MAIN CONVEYOR MOTOR (MOTOR END)
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- R-2 RECEPTACLE (SIDE CONVEYOR CABLE)
- R-7 RECEPTACLE (FEEDER MOTOR CABLE)
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- RC-1A RIGID CONDUIT TO OPERATOR'S CONTROL BOX (CONTROL BOX END)
- RC-2 RIGID CONDUIT TO JUNCTION BOX (DISTRIBUTION PANEL END)
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- P-7A PLUG & RECEPTACLE (MOUNTED ON FEEDER MOTOR)
- J.B. JUNCTION BOX
- R.M. MAIN POWER RECEPTACLE (415 V. 3 PHASE - 60 CY. - 4 WIRE POWER SOURCE)
- M.B.-1 MAIN BUS - (LINE NO. 1)
- M.B.-2 MAIN BUS - (LINE NO. 2)
- M.B.-3 MAIN BUS - (LINE NO. 3)

WIRE DIAGRAM 3820-205/1 (ROLL CRUSHER)

CONTROL & DISTRIBUTION PANEL (FRONT VIEW)



(Power distribution wiring diagram)
Figure 1. Wiring diagram—Continued.

EMC 3820-205-20/1/1 (4)

best copy available